

In re Application of: Achiron et al  
Serial No.: 10/507,380  
Filed: July 18, 2005  
Office Action Mailing Date: December 15, 2008

Examiner: DUSTON, Jennifer Ann  
Group Art Unit: 1636  
Attorney Docket: 28594

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**REMARKS**

Favorable reconsideration of the above-identified application in view of the amendments above and the remarks following is respectfully requested.

Claims 1, 4-8, 10-17 and 22-35 are pending in the application, of which Claims 5-8, 10-12, 16, 17 and 22-35 have been withdrawn. Claims 1, 4, and 13-15 have been rejected. Claims 1 and 13-15 have now been amended.

***Specification***

The Examiner states that the substitute specification filed August 19, 2008 is objected to under 35 U.S.C. 132(a) for introducing new matter into the disclosure of the invention.

The Examiner's objection is traversed.

Notwithstanding, please note that the specification has now been amended to provide the Affymetrix identification codename for the partial target sequence for which the Affymetrix probes were designed to hybridize with for all the Tables therein. Using these partial target code names it is possible to use Affymetrix software (available at the time of filing) to ascertain the target sequences for each gene. Applicant contends that provision of these code names enables anyone of ordinary skill in the art to carry out the presently claimed invention.

The specification teaches that the array used for Tables I-IV was U95Av2 - see page 38, line 16 of the amended specification and the array used for Table V was U133A - see page 38, line 17 of the amended specification. Although the code names of the partial target sequences were not disclosed in the original specification, these partial target sequences were available to the public at the time of filing. Accordingly, the addition of the code names for the partial target sequences does not add new matter to the specification.

In addition, the specification has also been amended to provide SEQ ID NOs. for the genes listed in Table II. The sequences provided are the most up-to date

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sequences known at the time of filing of the application, and accordingly were the sequences used by Affymetrix to design their probes. Applicant contends that this approach also does not constitute addition of new matter.

The Examiner has also objected to the disclosure for referencing an incorrect Table number.

Please amend the paragraph on page 49 lines 12-18 as specified on Page 2:

The Examiner states that the amendment to the specification to insert the necessary language for the petition to accept color drawings is not compliant with 37 CFR 1.121.

Please add the paragraph specified on page 3 of this response to page 15, line 15 of the substitute specification such that it constitutes the first paragraph of the brief description of the drawings.

The Examiner has objected to the disclosure for containing embedded hyperlinks. Please amend the specification as indicated on Pages 3 and 4.

The Examiner states that it is improper to incorporate subject matter by reference to GenBank Accession numbers. Please note that the paragraph relating to incorporation of subject matter by reference to GenBank Accession numbers has been amended - see Page 11 of this response.

The Examiner has objected to the use of non-capitalized trademarks and their use without accompaniment of their generic terminology. Please amend the specification as indicated on Pages 6-11.

### ***35 U.S.C. § 112, First Paragraph Rejections***

The Examiner has rejected Claims 1, 4, and 13-15 under 35 U.S.C. § 112, first paragraph for failing to comply with the written description requirement.

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The Examiner states that the sequence of the genes is essential matter for carrying out the invention. However, the Examiner states that addition of sequence ID numbers introduces new matter.

The Examiner's rejection is traversed.

Notwithstanding, Applicant has elected to cancel the matter that was incorporated into the specification in the response to the Office action of February 20, 2008. Instead, Applicant wishes to incorporate the sequences of the genes listed in Table II only. Please find enclosed a substitute specification which references each gene by a sequence ID number.

The sequences of all the genes provided correspond to the most up-to date sequence known at the time of filing.

As mentioned, Applicant has also amended the specification to incorporate the Affymetrix target ID for each gene. Applicant contends that addition of this matter now places the specification in condition for allowance.

The Examiner has rejected Claims 1, 4, and 13-15 under 35 U.S.C. § 112, first paragraph for failing to comply with the enablement requirement.

The Examiner states that the claims are too broad since they are not limited to the use of samples of peripheral blood mononuclear cells obtained from blood, nor does it limit the control samples, to ones which are age-matched or sex-matched. Further, the Examiner states that it would be unpredictable to compare the results obtained from a patient suffering from MS to the results obtained from a single healthy individual.

The Examiner concludes that such broad claims are not enabled.

The Examiner's rejections are traversed.

Notwithstanding, please note that the claims have now been limited to samples comprising peripheral blood mononuclear cells obtained from blood. Support for such a limitation can be found on Page 41, line 6.

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Further, the control samples of Claim 1 have been limited to ones which are age and sex matched. Support for such an amendment can be found on Page 16, line 2 and Page 37, line 24 and Page 38, line 1.

Applicant wishes to point out that the specification teaches a group of genes whose expression may be used to diagnose whether a person has Multiple Sclerosis or not. These genes were identified by comparing a number of patient samples with a number of control samples. Selection of the genes was effected following complicated statistical analysis and care was taken to avoid counting genes which differ due to genetic heterogeneity. As such Applicant maintains that limitation of the control sample to an age and sex-matched sample is sufficient to increase the level of predictability and that one control sample is sufficient for performing the presently claimed method.

In view of the above amendments and remarks, it is respectfully submitted that claims 1, 4 and 13-15 are now in condition for allowance. An early Notice of Allowance is respectfully and earnestly solicited.

Respectfully submitted,



Martin D. Moynihan  
Registration No. 40,338

Date: June 3, 2009

**Enclosures:**

- Petition for Extension (Three Months)
- Request for Continued Examination (RCE)
- Replacement Sequence Listing on 3 CD-ROM's (1 CRF/ 2 Paper Format)
- Annotated Marked-Up Specification
- Substitute Specification





# PERIPHERAL BLOOD CELL MARKERS USEFUL FOR DIAGNOSING MULTIPLE SCLEROSIS AND METHODS AND KITS UTILIZING SAME

## FIELD AND BACKGROUND OF THE INVENTION

5 The present invention relates generally to the field of diagnosis, treatment assessment and prognosis. More specifically, the present invention relates to peripheral blood cell expressed markers and kits and methods utilizing same for diagnosing, treating and assessing the state of multiple sclerosis (MS) in an individual. The present invention also provides cellular  
10 markers which are useful in distinguishing between different clinical courses of MS e.g.: probable, relapsing-remitting, secondary progressive or primary progressive as well as response to the therapy.

Multiple sclerosis is an autoimmune neurodegenerative disease, which is marked by inflammation within the central nervous system with lymphocyte  
15 attack against myelin produced by oligodendrocytes, plaque formation and demyelization with destruction of the myelin sheath of axons in the brain and spinal cord, leading to significant neurological disability over time. The disease frequently occurs in young adults between 20-40 years of age, is more prevalent in females than males (2:1), and has a characteristic geographical  
20 distribution – estimated prevalence in USA 120/100,000, (250,000 to 350,000 cases).

The annual cost of MS in USA was estimated about \$34,000 per person, \$2.2 million total lifetime cost per case or \$6.8 billion yearly, in a conservative estimate of a national annual cost (Anderson DW, 1992; Whetten-Goldstain K.,  
25 1998).

### ***Clinical Diagnosis and Evaluation of Stages of MS***

Typically, at onset an otherwise healthy person presents with the acute or sub acute onset of neurological symptomatology (attack) manifested by unilateral loss of vision, vertigo, ataxia, dyscoordination, gait difficulties,  
30 sensory impairment characterized by paresthesia, dysesthesia, sensory loss,

urinary disturbances until incontinence, diplopia, dysarthria or various degrees of motor weakness until paralysis. The symptoms are usually painless, remain for several days to a few weeks, and then partially or completely resolve. After a period of remission, a second attack will occur. During this period after the first attack, the patient is defined to suffer from probable MS. Probable MS patients may remain undiagnosed for years. When the second attack occurs the diagnosis of clinically definite MS (CDMS) is made (Poser criteria 1983; C.M. Poser et al., Ann. Neurol. 1983;13, 227).

The clinical disease courses of MS are relapsing-remitting, primary or secondary progressive (Abramsky, 1997; Russell, 1998).

The relapsing-remitting course of MS (85% of patients) is characterized by acute attacks or relapses during which new neurological symptoms and signs appear, or worsen. Relapse develops within a period of several days, lasts for 6-8 weeks, then gradually resolves. During the acute relapse scattered inflammatory and demyelinating central nervous system (CNS) lesions produce varying combinations of motor, sensory, coordination, visual, and cognitive impairments, as well as symptoms of fatigue and urinary tract dysfunction. The outcome of a relapse is unpredictable in terms of neurological sequel but it is well established that with additional relapses, the probability of complete clinical remission decreases and neurological disability and handicap may develop. On average, about 60% of patients remain fully functional 10 years after the primary attack, and 25 to 30% remain fully functional 30 years after onset. Statistically, the disease does not greatly decrease life expectancy (mean decrease 12 years), although some patients become severely disabled and die from recurrent infections and complications.

Primary progressive MS (10% of patients) is characterized by slow, progressive neurological dysfunction usually in the form of a gradual myelopathy causing spasticity and ataxia. Treatment regimen varies greatly with different clinical course and severity of the disease.

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The diagnosis of MS is still defined primary by clinical terms and relies on a combination of history, neurological examination and ancillary laboratory and neuro-imaging studies.

Laboratory tests for MS include: 1) CSF evaluation of IgG synthesis, oligoclonal bands; 2) MRI of the brain and spinal cord and; 3) exclusion of other autoimmune diseases by blood tests [e.g., serum B12 level; HTLV 1 or HIV 1 titers; sedimentation rate or C-reactive protein; RA latex (Rheumatoid arthritis); ANA, anti-DNA antibodies (systemic lupus erythematosus)]. However, accurate diagnosis and prognosis in the “probable” stage, and early relapsing-remitting stages remains problematic. For example, it has been shown that positive MRI findings in the first demyelinating attack only provide a 50% successful prediction of development of clinically definite MS within 2-3 years (CHAMPS Study Group, Neurology 2002;59:998-1005). Likewise, Villar et al (Neurology 2002;59:877-83) found that detection of oligoclonal IgM bands with early symptoms were only partially predictive of development of clinically definite MS.

Other laboratory tests may provide some additional support for the diagnosis, but evidence of lesions disseminated in time and space remains a cardinal element of the diagnosis (Poser CM., 2001). In absence of definitive laboratory tests and pathognomonic clinical features, MS remains ultimately a diagnosis of exclusion.

Diseases that may be confused with MS are: 1) Acute disseminated encephalomyelitis (follows infections or vaccination mainly in children, fever, headaches, and meningitis common), 2) Lyme disease (antibodies to Borrelia species antigens in serum and CSF), 3) HIV associated myelopathy (HIV antibodies present), 4) HTLVVI myelopathy (HTLVVI antibodies present in serum/CSF), 5) Neurosyphilis (syphilis antibodies present in serum and/or CSF, 6) Progressive multifocal leukoencephalopathy (biopsy of lesions demonstrates virus by electron microscopy), 7) Systemic lupus erythematosus (CNS

manifestations of lupus, antinuclear antibodies, anti-dsDNA), 8) Polyarteritis nodosa (systemic signs, micro-aneurysms demonstrated by angiographies, vasculitis demonstrated in biopsy of involved areas), 9) Sjogren's syndrome (dry eyes and mouth, antiRo and antiLa antibodies), 10) Behcet's disease (Oral/genital ulcers, antibodies to oral mucosa), 11) Sarcoidosis (CNS signs, increased protein in CSF, biopsy shows granuloma, 12) Paraneoplastic syndromes (older age group, antiYo antibodies), 13) Subacute combined degeneration of cord (peripheral neuropathy, vitamin B12 levels), 14) Sub acute myelo-optic-neuropathy (adverse reaction to chlorhydroxyquinoline, mainly in Japanese), 15) Hereditary spastic paraparesis/ primary lateral sclerosis (normal CSF, MRI and visual evoked potential studies), 16) Adrenomyeloneuropathy (adrenal dysfunction, neuropathy, increased plasma very long-chain fatty acids), 16) Spinocerebellar syndromes (familial, pes cavus scoliosis, abnormal reflexes, normal CSF IgG), 17) Miscellaneous – strokes, tumors, arteriovenous malformations, arachnoid cysts, Arnold-Chiari malformations, and cervical spondylosis all may lead to diagnostic dilemmas on occasion. Thus, detailed history and neurological examination must be complemented by specific laboratory tests for the correct diagnosis of MS. Clearly there is a long felt need for more powerful diagnostic tools for prediction and staging of MS.

### ***Etiology of MS***

The etiology of MS is unknown. It is suggested that a combination of genetic background and environmental factors and immune response are involved in the disease. A certain incidence of familial occurrence has been observed, with the concordance rate among monozygotic twins being 30%, a 10-fold increase over that in dizygotic twins or first-degree relatives (Steinman, 1966; Dymment et al Mol. Gen 1997;6:1693-98). In addition, recent research indicates that the tissue damage in MS occurs as the result of pathological autoimmune responses to several myelin antigens following exposure to an as yet undefined environmental causal agent.

However, although some environmental factors have been statistically associated with the disease, none have provided correlations of any predictive value. Environmental factors seem to trigger MS in subjects who are already genetically susceptible to the illness. Most probably no one dominant gene determines genetic susceptibility, but rather many genes, each with different influence, are involved. Indeed, the initial pathogenic process could be caused by one group of genes, while others groups could be responsible for the development and progression of the disease (Oksenberg, 2001; Compston, 1997).

#### *Microarray Analysis and MS*

Microarray technology is based on hybridization of mRNA to high-density array of immobilized target sequences. Each sequence corresponds to a specific gene(s) of interest. The labeled pool of sample mRNA is subsequently hybridized to the array (chip). Application of this technology provides the capability of monitoring thousands of various genes simultaneously. Today commercial available DNA microarrays (Affymetrix, Santa Clara CA, USA) contain elements representing 10,000, 20,000 or more genes that have been characterized in terms of function or disease association. The preparation and use of microarrays for diagnostics, research and drug development is disclosed in, inter alia, US Pat. Nos. 6,324,497 and 6,468,476 to Friend et al and 6,410,229 to Lockhart et al; and Intl Pat. Application WO 0053625C2 and A2.

Several application of microarrays in human disease have been reported, for example the identification (marker) genes involved in ovarian carcinogenesis (Ono K., 2000); classification of genes expression profiling of cutaneous malignant melanoma (Bitter M., 2000); and expression profile of Tangl-Rearing CA1 neurons in Alzheimer's disease (Stephen, 2000). Alizaden (2000) characterized gene expression in diffuse large B cell lymphoma, where two distinct gene expression patterns, characterized by different molecular forms of B cells lymphoma, were identified. In addition, microarray

technology has also been applied to diagnosis and monitoring of such diverse diseases as cancer (US Pat. No. 6,511,849 to Freuhauf et al), psoriasis (Intl Pat. Application WO 20020027538 to Trepicchio et al), T-helper cell related diseases (Trepicchio et al , Intl Pat Application WO 20020039734), Epstein-Barr disease (U.S. Pat. Nos. 6,506,553 and 6,468,476 to Smith and Parks), rheumatoid arthritis (Intl Pat Application WO 0248310A2 to Trepicchio et al) and Reward Deficiency Syndrome, all of which are incorporated herein by reference.

In a recent review (Greenberg SA., 2001) the author discussed the potential application of DNA microarray technology for understanding neurological disorders. Using cDNA microarrays technology, brain tissue from pathology lesions and normal white matter of single MS patient were analyzed (Whitney LW.,1999). Blood genomic fingerprints were demonstrated after experimental strokes, seizures, hypoglycemia and hypoxia of rats (Yang Tang, 2001). Similarly, microarray analysis of gene expression in brainstem and spinal cord tissues from the animal models of MS (experimental autoimmune encephalomyelitis, EAE) has identified a number of differentially expressed genes from active-acute versus silent lesions (Lock C. et al Nat Med 2002;8,500-504), and also suggested a role for the proinflammatory cytokine osteopontin in the development of EAE in mice (Chabas D et al Science 2001;294:1731-34).

In another recent study, Ramanathan M et al (J of Immunology 2001;116:213-19) used cDNA microarray technology to identify abnormal gene expression patterns in PBMC of relapsing-remitting MS patients. The study compared PBMC gene expression in 15 patients during remission (only) with that of 15 healthy controls, using a GeneFilters GF211 array (Research Genetics, Huntsville AL, USA) having approximately 5200 human gene sequences. Groups of marker genes correlated with MS were disclosed, but the range of differences (fold changes) between level of gene expression in MS and

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control groups was only 13 to 35 % for unregulated and from 11 to 43% for down regulated genes. Such small differences are probably due to the limited sensitivity of the technology employed in using GeneFilters arrays, and may not have any clinical or diagnostically mining significance. More significantly, the population of MS patients was limited, including only patients during clinical remission, who had not received any immunosuppressive treatment for at least 3 months. Thus, the markers described do not provide a profile of expression patterns useful for diagnosing clinically defined MS in patients having probable MS, or for determining stages of the disease.

Trepicchio et al. (Intl Pat. Application No. WO 02/079218 A1) also describe the use of microarray technology in determining characteristic gene expression in an animal model of MS (murine EAE) and in tissue samples from MS patients. The human samples were PBMC or brainstem tissue, collected from 60 patients manifesting a wide variety of symptoms, at different stages of MS including relapsing-remitting, primary and secondary progressive, and acute exacerbation. RNA probes prepared from these samples were hybridized to a human chip array containing approximately 14,000 gene sequences (MicroArray, Affymetrix, cat no. 510448, Santa Clara CA), and expression profiles compared with those of healthy controls. Determination of the panel of “MS-related” markers was based merely on fold change of greater than 2 fold (up- or downregulated), with a confidence level of  $p < 0.01$ . No more stringent statistical criteria were applied. A “panel” of 300 differentially regulated genes was thus described in the PBMC samples, and another 100 in the brain lesion tissue. However, no classification of expression profiles characteristic to specific stages of the disease was provided, and the “class predictor model”, as described, using “neighborhood analysis”, was applied for attempted prediction of “MS-afflicted” or “non-diseased” samples only. Thus, the panel of markers described is not applicable to the diagnosis of stage of MS, in general, is

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unsuited for the prediction of clinically definite MS or probable MS patients, and is clearly non-predictive in monitoring response to treatment.

There is thus a widely recognized need for, and it would be highly advantageous to have gene expression profiles useful in distinguishing between different forms of MS e.g.: probable, relapsing-remitting, primary or secondary as well as response to the therapy, devoid of the above limitations.

SUMMARY OF THE INVENTION

According to one aspect of the present invention there is provided a method of diagnosing a subject with multiple sclerosis, the method comprising determining a level of expression of at least one gene selected from the group consisting of the genes listed in Tables I-V in a sample obtained from the subject, wherein a substantial difference between the level of expression of the gene in the sample obtained from the subject and a normal expression level of the gene is an indication that the subject is afflicted with multiple sclerosis.

According to further features in preferred embodiments of the invention described below a method of monitoring a state of multiple sclerosis in a subject, the method comprising monitoring a level of expression of at least one gene selected from the group consisting of the genes listed in Tables I-V over a predetermined time period, wherein substantial difference between the levels of expression of the at least one gene over the predetermined time period indicates a change in a state of the multiple sclerosis in the subject.

According to further features in preferred embodiments of the invention described below monitoring the level of expression of at least one gene over the predetermined time period is effected by periodically obtaining a sample from the individual and determining the level of expression of the at least one gene in the sample.

According to still further features in the described preferred embodiments the at least one gene comprises at least 10, at least 50, at least 100, at least 250, at least 500, at least 750, at least 1000 or at least 1200 genes



each independently selected from the group consisting of the genes listed in Tables I-V.

According to another aspect of the present invention there is provided a method of diagnosing a subject with multiple sclerosis, the method comprising the step of determining a level of expression of each of the genes listed in Tables I-V in a sample obtained from the subject, wherein a substantial difference between expression levels of the genes in the sample obtained from the subject and normal expression levels of the genes is an indication that the subject is afflicted with multiple sclerosis.

According to further features in preferred embodiments of the invention described below the normal expression level of the at least one gene or genes is determined by measuring the level of expression of the gene or genes in at least one control sample obtained from at least one healthy individual.

According to still further features in the described preferred embodiments the sample includes peripheral blood mononuclear cells.

According to yet further features in the described preferred embodiments the substantial difference is a difference statistically significant at a confidence level of  $p=0.05$  as determined by at least one test selected from the group consisting of a t-test, a TNoM and an INFO score.

According to further features in preferred embodiments of the invention described below the level of expression of the at least one gene or genes is determined by quantifying a level of a protein product thereof in the sample.

According to still further features in the described preferred embodiments quantifying a level of the protein is effected using a reagent which specifically binds with the protein.

According to yet further features in preferred embodiments of the invention described below the reagent comprises an antibody or fragments thereof.

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According to further features in preferred embodiments of the invention described below the at least one gene or genes are selected from the genes listed in Table I.

5 According to still further features in preferred embodiments of the invention described below the at least one gene or genes are selected from the genes listed in Table II.

According to yet further features in preferred embodiments of the invention described below the at least one gene or genes are selected from the genes listed in Table III.

10 According to further features in preferred embodiments of the invention described below the at least one gene or genes are selected from the genes listed in Table IV.

According to still further features in the described preferred embodiments at least one gene or genes are selected from the genes listed in  
15 Table V.

According to yet further features in preferred embodiments of the invention described below the level of expression of the at least one gene or genes in the sample is determined by detecting the presence in the sample of a transcribed polynucleotide or portion thereof. The transcribed polynucleotide  
20 can be mRNA.

According to further features in preferred embodiments of the invention described below the transcribed polynucleotide or portion thereof is detected via a labeled probe which specifically hybridizes with the transcribed polynucleotide or portion thereof.

25 According to still further features in the described preferred embodiments the sample from a subject is T cells, the at least one gene or genes are selected from the genes listed in Table IV and the normal expression of the gene or genes is T-cell expression.

According to an additional aspect of the present invention there is provided a method of assessing the efficacy of a treatment regimen on multiple sclerosis in a subject, the method comprising determining a level of expression of at least one gene or genes selected from the group consisting of the genes listed in Tables I-V in samples obtained from the subject prior to, and following exposure to the treatment regimen, wherein a substantial difference in the expression level of at least one gene or genes between the samples is an indication that the treatment regimen is efficacious in treating multiple sclerosis in the subject.

According to further features in preferred embodiments of the invention described below the treatment regimen is administering at least one test compound for inhibiting multiple sclerosis.

According to still further features in the described preferred embodiments the treatment regimen is an environmental condition.

According to yet further features in the described preferred embodiments the substantial difference is a difference statistically significant at a confidence level of  $p=0.05$  as determined by at least one test selected from the group consisting of a t-test, a TNoM and an INFO score.

According to further features in preferred embodiments of the invention described below the level of expression of the at least one gene or genes is determined by quantifying a level of a protein product thereof in the sample.

According to still further features in the described preferred embodiments quantifying a level of the protein is effected using a reagent which specifically binds with the protein.

According to yet further features in preferred embodiments of the invention described below the reagent comprises an antibody or fragments thereof.

According to further features in preferred embodiments of the invention described below the at least one gene or genes are selected from the genes listed in Table I.

5 According to still further features in preferred embodiments of the invention described below the at least one gene or genes are selected from the genes listed in Table II.

According to yet further features in preferred embodiments of the invention described below the at least one gene or genes are selected from the genes listed in Table III.

10 According to further features in preferred embodiments of the invention described below the at least one gene or genes are selected from the genes listed in Table IV.

According to still further features in the described preferred embodiments at least one gene or genes are selected from the genes listed in  
15 Table V.

According to yet further features in preferred embodiments of the invention described below the level of expression of the at least one gene or genes in the sample is determined by detecting the presence in the sample of a transcribed polynucleotide or portion thereof. The transcribed polynucleotide  
20 can be mRNA.

According to further features in preferred embodiments of the invention described below the transcribed polynucleotide or portion thereof is detected via a labeled probe which specifically hybridizes with the transcribed polynucleotide or portion thereof.

25 According to still further features in the described preferred embodiments the sample from a subject is T cells, the at least one gene or genes are selected from the genes listed in Table IV and the normal expression of the gene or genes is T-cell expression.

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According to still further features in the described preferred embodiments the at least one gene comprises at least 10, at least 50, at least 100, at least 250, at least 500, at least 750, at least 1000 or at least 1200 genes each independently selected from the group consisting of the genes listed in  
5 Tables I-V.

According to another aspect of the present invention there is provided a kit for diagnosing multiple sclerosis in a subject, the kit comprising components suitable for determining expression levels of at least one gene selected from the group of genes listed in Tables I-V.

10 According to further features in the described preferred embodiments the reagents include at least one polynucleotide sequence selected capable of specifically hybridizing with an transcription product of the at least one gene and reagents for detecting and optionally quantifying a complex formed from the at least one polynucleotide sequence and said transcription product.

15 According to still further features in the described preferred embodiments the reagents include at least one antibody selected capable of specifically binding a polypeptide product of the at least one gene and reagents for detecting and optionally quantifying a complex formed from the at least one antibody and the polypeptide product.

20 According to further features in preferred embodiments of the invention described below the at least one gene is selected from the genes listed in Table I.

According to still further features in preferred embodiments of the invention described below the at least one gene is selected from the genes listed  
25 in Table II.

According to yet further features in preferred embodiments of the invention described below the at least one gene is selected from the genes listed in Table III.

## ANNOTATED MARKED-UP SPECIFICATION

According to further features in preferred embodiments of the invention described below the at least one gene is selected from the genes listed in Table IV.

According to still further features in the described preferred  
5 embodiments at least one gene is selected from the genes listed in Table V.

According to further features in preferred embodiments of the invention described below the kit further comprises packaging material identifying the kit as useful from diagnosing MS.

According to another aspect of the present invention there is provided a  
10 polynucleotide array comprising at least 10 and no more than 1500 polynucleotide sequences, wherein each of the sequences is selected capable of hybridizing with a transcription product of a polynucleotide sequence of a gene selected from the group of genes listed in Tables I-V.

According to further features in preferred embodiments of the invention  
15 described below the array is selected having polynucleotide sequences capable of diagnosing subjects suspected of suffering from multiple sclerosis. The subjects may also be suspected of suffering from probable multiple sclerosis, primary progressive multiple sclerosis, secondary progressive multiple sclerosis, and/or relapsing/remitting multiple sclerosis.

According to further features in preferred embodiments of the invention  
20 described below the gene is selected from the genes listed in Table I, II, III, IV and/or IV.

According to yet another aspect of the present invention there is provided an array comprising at least 10 and no more than 1500 antibodies or  
25 antibody fragments each capable of specifically binding a protein product of a gene selected from the group of genes listed in Tables I-V.

According to further features in preferred embodiments of the invention described below the array is selected having antibodies or antibody fragments capable of diagnosing subjects suspected of suffering from multiple sclerosis.

The subjects may also be suspected of suffering from probable multiple sclerosis, primary progressive multiple sclerosis, secondary progressive multiple sclerosis, and/or relapsing/remitting multiple sclerosis.

According to further features in preferred embodiments of the invention described below the gene is selected from the genes listed in Table I, II, III, IV and/or IV.

Implementation of the method and system of the present invention involves performing or completing selected tasks or steps manually, automatically, or a combination thereof. Moreover, according to actual instrumentation and equipment of preferred embodiments of the method and system of the present invention, several selected steps could be implemented by hardware or by software on any operating system of any firmware or a combination thereof.

## BRIEF DESCRIPTION OF THE DRAWINGS

The invention is herein described, by way of example only, with reference to the accompanying drawings. With specific reference now to the drawings in detail, it is stressed that the particulars shown are by way of example and for purposes of illustrative discussion of the preferred embodiments of the present invention only, and are presented in the cause of providing what is believed to be the most useful and readily understood description of the principles and conceptual aspects of the invention. In this regard, no attempt is made to show structural details of the invention in more detail than is necessary for a fundamental understanding of the invention, the description taken with the drawings making apparent to those skilled in the art how the several forms of the invention may be embodied in practice.

In the drawings:

FIGs. 1A-B are graphic representations of the differences in PMBC gene expression between MS patients and healthy subjects. RNA from Peripheral

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Blood Mononuclear Cells (PMBC) of 26 patients diagnosed with MS, and 18 healthy, age-matched controls was purified, labeled hybridized to a Genechip array (U95Av2, Affymetrix Inc. Santa Clara CA, USA), scanned and analyzed according to manufacturer's recommendations. The data were normalized and fold ratios calculated for each gene of the MS samples against the geometric mean of the controls. Figure 1A shows the number of MS specific genes detected having increased expression (fold change greater than 1.5) analyzed by t-test (red line), TNoM (green line) and INFO (blue line), compared with random occurrence (black line), at confidence levels (False Discovery Rates, FDR) of 90% ( $p=0.10$ ) to 100% ( $p=0$ ). Note the high level of significant MS-related gene expression at 95% FDR and above (arrows) (1249 distinguished genes). Figure 1B is an infogram of the 1249 genes most significantly ( $p<0.05$  on all three tests) distinguishing MS patients (MS) from (control) healthy controls, determined as above. Each spot represents expression of a specific gene; color intensity of overexpressed (green) and under-expressed (red) genes indicates fold increase as compared to controls. Gray color indicates genes showing no difference in expression between MS and controls.

FIGs. 2A-B are graphic representations of the differences in PMBC gene expression between MS patients during acute relapse, and MS patients in remission. RNA from PMBC of 12 relapsed, and 14 clinically in remission patients was purified, labeled, hybridized and analyzed as described for Figures 1A-B hereinabove. Figure 2A shows the number of acute relapse-specific genes detected having increased expression in relapse, as analyzed by t-test (red line), TNoM (green line) and INFO (blue line), compared with random occurrence (black line), at confidence levels (False Discovery Rates, FDR) of 90% ( $p=0.10$ ) to 100% ( $p=0$ ). 735 genes were detected having significant relapsing-related gene expression at 95% FDR and above. Figure 2B is an infogram analysis of the 735 genes most significantly ( $p<0.05$  on all three tests) distinguishing acute relapsing MS patients (Relapse) from MS patients in



remission (Remission). Note the different profiles of gene expression in patients undergoing treatment (Relapse + and Remission +) compared with untreated patients (Relapse- and Remission -).

FIG. 3 is a pie chart diagram showing the breakdown, by functional character, of specific genes displaying up- or down-regulation in MS-derived MOG-reactive T-cell lines, as compared to normal-derived MOG-reactive T-cell lines. Significant MOG reactive MS-related genes are defined as genes with TNoM=0 and  $p=0.057$  as compared to normal MOG-reactive T-cells.

FIG. 4 is a graphic representation of the differences in gene expression between MOG-stimulated T-cell lines from MS patients and healthy controls. RNA from MOG-stimulated T-cells of 4 MS patients and 3 matched controls was purified, labeled, hybridized and analyzed as described for Figures 1A-B hereinabove. Panel A shows a cluster analysis of 150 differentially expressed genes analyzed as described hereinabove (TNoM=0,  $p<0.05$ ) distinguishing T-cells of MS (MS) patients from controls (Controls). Panel B shows a cluster analysis of the 43 most informative genes (TNoM=0,  $p<0.05$ , and fold change  $>1.5$ ). Each row represents a gene, and each column represents a T-cell line from a different subject. Yellow color indicates genes with an increased expression relative to controls are yellow, and blue color indicates genes with relative decreased expression.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is of methods and kits for diagnosing multiple sclerosis in subjects, using novel gene expression profiles derived from peripheral blood cells. Specifically, the present invention can be used to diagnose MS in early stages of the disease, to determine clinical stage and predict the course of the disease in patients with a unclear diagnoses, to provide definition and prognostic information in patients with probable MS, to assess

and monitor MS therapies and to screen new and established drugs and treatments for MS.

The principles and operation of the present invention may be better understood with reference to the drawings and accompanying descriptions.

5 Before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and the arrangement of the components set forth in the following description or illustrated in the Examples and drawings. The invention is capable of other embodiments or of being practiced or carried out  
10 in various ways. Also, it is to be understood that the phraseology and terminology employed herein is for the purpose of description and should not be regarded as limiting.

The present invention provides previously unavailable accuracy in predicting and staging MS, by identifying genes and groups of genes  
15 specifically over- and under-expressed in PBMC of patients at various stages of their disease.

As is further described in the Examples section which follows, the present inventors have conducted a broad scale analysis of PMBC expressed genes using hybridization of biotin-labeled PBMC mRNA to more than 12,000  
20 human gene sequences provided on DNA chips. By utilizing specialized statistical analysis approaches, the present inventors identified in the microarray data the most highly informative expression profiles.

As mentioned hereinabove, multiple sclerosis is a chronic, multi-factorial neurodegenerative disease of unknown etiology, the diagnosis and  
25 classification of which remains largely clinical in nature. Identification of the stages and progression of the disease, particularly definition of the probable MS stage, is crucial to determination of optimal treatment regimen and development of effective therapies. However, the complexities of autoimmune interactions, and the variability of MS in different individuals have made diagnosis and

subsequent prognosis using traditional methods inexact and challenging. Methods for more accurate diagnosis of MS are greatly needed.

The profiles of MS-related genetic markers listed in Table I represent genes exhibiting differential expression in PBMCs from a large sample of MS patients, compared to that of age-matched healthy controls. Abundance of specific gene transcripts, represented by the intensity of label hybridizing to individual sequence loci of the MicroArray (Affymetrix Inc, Santa Clara CA), was recorded and quantified according to the manufacturers recommended protocols (such as GeneChip 3.0 software from Affymetrix). However, rather than composing the profile of differentially expressed genes based on probabilities using simple distribution of mean intensities, as has been reported by Ramanathan et al (J Immunol 2001;116:213-219), informative genes were selected based on the degree to which they were predictive of classification of the sample as "diseased" or "not diseased". By applying the rigorous three-pronged statistical analysis described in detail hereinbelow, 1249 genes most informative in distinguishing between diseased and otherwise not diseased patients were identified (see Table I). By applying an even more restrictive analysis of the data in Table I (see Table II, Bonfferoni analysis), a subset of the 300 highest scoring genes was identified. These MS marker genes comprise both over-expressed and downregulated genes, and represent of a diverse group of functional gene categories. Additional analysis of the markers uncovered herein also led to the identification of another restricted marker set which can be accurately utilized to diagnose probable MS patients. As is further described hereinbelow, the identification of such a marker set represents a significant breakthrough since it enables to treat individuals at a much earlier stage of MS then previously possible.

Thus, according to one aspect of the present invention there is provided a method of diagnosing a subject with multiple sclerosis by determining a level of expression of at least one gene of the genes listed in Tables I-V in a sample

obtained from the subject, wherein a substantial difference between the level of expression of the gene in the sample obtained from the subject and a normal expression level of the gene is an indication that the subject is afflicted with multiple sclerosis.

5        Normal expression levels of a marker or markers are obtained from isolated or cultured PMBCs (e.g., T-cell cultures), or samples obtained from individuals not affected with MS. A substantial difference is preferably of a magnitude that is statistically significant (see the Examples section for more detail). In particularly preferred embodiments, the marker is increased or  
10        decreased relative to control samples by at least 2-, 3-, 4-, 5-, 6-, 7-, 8-, 9-, or 10-fold or more. Similarly, one skilled in the art will be well aware of the fact that a preferred detection methodology is one in which the resulting detection values are above the minimum detection limit of the methodology utilized.

As is further described in the Examples section which follows, the  
15        marker listed in Tables I-V were identified in peripheral blood cells. As such, the sample obtained from the individual is preferably a peripheral blood sample or any sample which includes blood cells such as T-cells. In a preferred embodiment, the sample is blood, thymus, spleen, lymph, pus, or bone marrow. However, it will be apparent to one skilled in the art that PMBCs may be  
20        present as an infiltrate in many other tissues, and that such tissues may also serve as samples in which the presence, activity, and/or quantity of the markers of the invention may be assessed. The tissue samples containing one or more of the markers themselves may be useful in the methods of the invention, and one skilled in the art will be well aware of methods by which such samples may be  
25        conveniently obtained, stored, preserved and processed. For further description relating to collection and processing of blood samples please see the Examples section which follows.

As is detailed in the Examples section below, analysis of PBMC genes differentially expressed in MS, according to the methods described herein,

revealed groups of genes of specific interest in MS. Genes that are most significantly over expressed, or downregulated in MS can indicate members of pathways important to disease development or pathology. Strongly overexpressed genes, according to Tables I and II, include **SLAM** (signaling lymphocyte activation molecule, GenBank Accession No. U33017), **LEF1** (lymphoid enhancer-binding factor 1, GenBank Accession No. AL099409), **LRP5** (low density lipoprotein receptor-related protein 5, GenBank Accession No. AF077820), **LILRB** (leukocyte immunoglobulin-like receptor, GenBank Accession No. AF004230), **LY75** (lymphocyte antigen 75, GenBank Accession No. AF011333), **CDW52** (GenBank Accession No. N90866), **PIP5K1-gamma** (Phosphatidylinositol-4-phosphate 5-kinase, type 1, gamma, GenBank Accession No. AB011161), **MAP4** (Microtubule-associated protein 4, GenBank Accession No. M64571), **CTSK** (Cathepsin K, GenBank Accession No. X82153) and **CTSB** (Cathepsin B, GenBank Accession No. L22507).

Strongly down-regulated genes include **IL1B** (Interleukin 1 beta, GenBank Accession No. M15330), **TRAF6** (GenBank Accession No. U78798), **SCYA20** (GenBank Accession No. U64197), **IL1R** (type1 receptor, GenBank Accession No. M27492), **IL1RAP** (receptor accessory protein, GenBank Accession No. AB006537) and **IL1RN** (receptor antagonist, GenBank Accession No. X52015), **TGFB1** (Transforming growth Factor beta 1, GenBank Accession No. X05839), **SKI** (v-ski sarcoma viral oncogene homologue, GenBank Accession No. X15218), **VEGF** (Vascular endothelial growth factor, GenBank Accession No. M63978), **IGFBP4** (Insulin-like growth factor binding protein 4, GenBank Accession No. U20982), **EREG** (epiregulin, GenBank Accession No. NM\_001432.1), and **NR4A1**, **NR4A2**, **NR4A3** (nuclear receptor family genes, GenBank Accession Nos. NM\_002135.1, X75918 and U12767, respectively).

Functional groups of genes strongly represented in the profile of most significantly differentially regulated genes in MS include, inter alia, apoptosis-

## ANNOTATED MARKED-UP SPECIFICATION

related genes, T-cell activation and expansion related genes, cell proliferation related genes and epidermal growth factor genes. Many of the marker genes identified are associated with other MS- related genes, according to Tables I-V.

It will be appreciated that although a single marker can be used for diagnosis, diagnostic accuracy typically increases with an increase in the number of markers utilized.

As such, the diagnostic method of the present invention preferably utilizes a marker set that can range anywhere from 2 genes to 1200 genes. For example, the present method can utilize at least 10, at least 50, at least 100, at least 250, at least 500, at least 750, at least 1000 or at least 1200 genes each independently selected from the group consisting of the genes listed in Tables I-V. Most preferably the markers utilized are selected from the sequences listed in Table II.

The markers sets utilized can be selected according to a statistical significance or fold change thereof (provided for each marker in Tables I-V), a higher significance and higher fold change indicating higher probability of marker accuracy. For example, a selected marker set can encompass markers displaying a high statistical significance (low P-value), preferably a P-value lower than  $5.0E-02$ , more preferably lower than  $5.0E-04$ , most preferably, lower than  $5.0E-06$ . Alternatively, markers can be selected according to shared features of the marker gene. For example, gene markers of similar cellular function (e.g., genes of a signaling pathway such as apoptosis) or markers displaying similar activity (e.g., enzymes of the same enzyme family) can be grouped into specific marker sets.

Each marker set may be considered individually, although it is within the scope of the invention to provide combinations of two or more marker sets for use in the methods and compositions of the invention to increase the confidence of the analysis.

## ANNOTATED MARKED-UP SPECIFICATION

As used herein, the terms "polynucleotide" and "oligonucleotide" are used interchangeably, and include polymeric forms of nucleotides of any length, either deoxyribonucleotides or ribonucleotides, or analogs thereof. Polynucleotides may have any three-dimensional structure, and may perform  
5 any function, known or unknown. The following are non-limiting examples of polynucleotides: a gene or gene fragment, exons, introns, messenger RNA (mRNA), transfer RNA, ribosomal RNA, ribozymes, cDNA, recombinant polynucleotides, branched polynucleotides, plasmids, vectors, isolated DNA of any sequence, isolated RNA of any sequence, nucleic acid probes, and primers.

10 A polynucleotide may comprise modified nucleotides, such as methylated nucleotides and nucleotide analogs. If present, modifications to the nucleotide structure may be imparted before or after assembly of the polymer. The sequence of nucleotides may be interrupted by non-nucleotide components. A polynucleotide may be further modified after polymerization, such as by  
15 conjugation with a labeling component. The term also includes both double- and single-stranded molecules. Unless otherwise specified or required, any embodiment of this invention that is a polynucleotide encompasses both the double-stranded form and each of two complementary single-stranded forms known or predicted to make up the double-stranded form.

20 As used herein, a "gene" includes a polynucleotide containing at least one open reading frame that is capable of encoding a particular polypeptide or protein after being transcribed and translated. Any of the polynucleotide sequences described herein may be used to identify larger fragments or full-length coding sequences of the gene with which they are associated. Methods  
25 of isolating larger fragment sequences are known to those of skill in the art, some of which are described herein. A "gene product" includes an amino acid (e.g., peptide or polypeptide) generated when a gene is transcribed and translated.

## ANNOTATED MARKED-UP SPECIFICATION

As used herein, a "probe" is defined as an oligonucleotide that is provided as a reagent to detect a target present in a sample of interest by hybridizing with the target. Usually, a probe will comprise a label or a means by which a label can be attached, either before or subsequent to the hybridization reaction. Suitable labels include, but are not limited to radioisotopes, fluorochromes, chemiluminescent compounds, dyes, and proteins, including enzymes.

As used herein, "expression" includes the process by which polynucleotides are transcribed into mRNA and translated into peptides, polypeptides, or proteins. "Differentially expressed", as applied to a gene, includes the differential production of mRNA transcribed from a gene or a protein product encoded by the gene. A differentially expressed gene may be overexpressed or underexpressed as compared to the expression level of a normal or control cell. In one aspect, it includes a differential that is 2.5 times, preferably 5 times or preferably 10 times higher or lower than the expression level detected in a control sample. The term "differentially expressed" also includes nucleotide sequences in a cell or tissue which are expressed where silent in a control cell or not expressed where expressed in a control cell.

As used herein, the term "polypeptide" is defined as a compound of two or more subunit amino acids, amino acid analogs, or peptidomimetics. The subunits may be linked by peptide bonds. In another embodiment, the subunit may be linked by other bonds, e.g., ester, ether, etc. As used herein the term "amino acid" includes either natural and/or unnatural or synthetic amino acids, including glycine and both the D or L optical isomers, and amino acid analogs and peptidomimetics. A peptide of three or more amino acids is commonly referred to as an oligopeptide. Peptide chains of greater than three or more amino acids are referred to as a polypeptide or a protein.

As used herein, the term "marker" is defined as a polynucleotide or polypeptide molecule which is present or absent, or increased or decreased in



quantity or activity in subjects afflicted with multiple sclerosis, or in cells involved in multiple sclerosis. The relative change in quantity or activity of the marker is correlated with the incidence or risk of incidence of multiple sclerosis or progression from one stage of the disease to another.

5        Although all of the markers listed in Tables I-V can be used in diagnosis of MS, an additional object of the present invention was to identify those markers which can be utilized to diagnose specific clinical forms and/or stages of MS.

10        Accurate clinical tools for specific diagnosis of disease stages in MS are presently unavailable.

As a result of comprehensive studies conducted in efforts to evaluate specific gene expression in relation to clinical disease phases, the present invention provides, for the first time, specific markers sets which can be utilized in accurate diagnosis of specific forms and stages of MS

15        As is illustrated in Example II of the Examples section which follows, the present invention provides marker sets which can be accurately utilized to diagnose acute relapse, remission and probable stages of MS (Tables III-V).

Of particular importance is the marker set provided in Table V. As is described in the Examples section which follows, the present inventors also  
20        uncovered cellular markers which distinct between disease-related and non-disease related T-cell myelin reactivity. Although MS appears to be caused by autoimmune T-cells activated against myelin self-antigens, myelin-reactive T-cells have been demonstrated in healthy subjects as well. Thus, distinction between disease-related and non-disease related T-cell myelin reactivity is of  
25        great clinical and investigational importance.

Cellular markers which distinct between disease-related and non-disease related T-cell myelin reactivity include down-regulating apoptosis associated genes, up regulating anti-apoptotic genes and genes responsible for increased expansion capability of autoreactive T cells and enhanced ability to penetrate

the CNS. Thus, the markers of Table V include genes involved in perpetuating pathologic cellular proliferation and tissue destruction within the CNS characteristic of MS, along with increased resistance to regulation. This marker set accurately defines the requirements for an individual to develop MS, and thus has important predictive value, especially in diagnosing individuals having MS in the "probable" stage.

The identification of these markers significantly advances the field of MS diagnosis and treatment as well as provides tools which will enable elucidation of the mechanisms underlying MS formation and progression, ultimately leading to formulation of efficient, stage specific, treatment regimens.

The markers of the invention may be nucleic acid molecules (e.g., DNA, cDNA, or RNA) or the polypeptides encoded thereby. As such, detection of markers in a sample obtained from an individual can be effected using various detection methods well known to the ordinary skilled artisan.

Briefly, measurement of the relative amount of nucleic acid or polypeptide molecules can be effected by any method known in the art (see, e.g., Sambrook, J., Fritsh, E. F., and Maniatis, T. *Molecular Cloning: A Laboratory Manual*. 2nd, ed, Cold Spring Harbor Laboratory, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., 1989; and *Current Protocols in Molecular Biology*, eds. Ausubel et al. John Wiley & Sons: 1992). Typical methodologies for RNA detection include RNA extraction from a cell or tissue sample, followed by hybridization of a labeled probe (e.g., a complementary nucleic acid molecule) specific for the target RNA to the extracted RNA, and detection of the probe (e.g., Northern blotting). Typical methodologies for polypeptide detection include activity assays in cases of known enzymes, protein extraction from a cell or tissue sample, followed by hybridization of a labeled probe (e.g., an antibody) specific for the target protein to the protein sample, and detection of the probe. The label group can

be a radioisotope, a fluorescent compound, an enzyme, or an enzyme co-factor. Detection of specific polypeptide and nucleic acid molecules may also be assessed by gel electrophoresis, column chromatography, direct sequencing, or quantitative PCR (in the case of nucleic acid molecules) among many other techniques well known to those skilled in the art.

Probes based on the nucleotide sequence of a marker gene or of a nucleic acid molecule encoding a marker polypeptide of the invention can be used to detect transcripts or genomic sequences corresponding to the marker gene(s) and/or marker polypeptide(s) of the invention. In preferred embodiments, the probe comprises a label group attached thereto, e.g., the label group can be a radioisotope, a fluorescent compound, an enzyme, or an enzyme co-factor. Such probes can be used as a part of a diagnostic test kit for identifying cells or tissue which misexpress (e.g., over- or under-express) a marker polypeptide of the invention, or which have greater or fewer copies of a marker gene of the invention. For example, a level of a marker polypeptide-encoding nucleic acid in a sample of cells from a subject may be detected, the amount of mRNA transcript of a gene encoding a marker polypeptide may be determined, or the presence of mutations or deletions of a marker gene of the invention may be assessed. The invention further encompasses nucleic acid molecules that differ from the nucleic acid sequences of the genes set forth in Tables I-V, due to degeneracy of the genetic code and which thus encode the same proteins as those encoded by the genes shown in Tables I-V.

An isolated marker protein, or a portion or fragment thereof, can be used as an immunogen to generate antibodies that bind marker proteins using standard techniques for polyclonal and monoclonal antibody preparation. A full-length marker protein can be used or, alternatively, the invention provides antigenic peptide fragments of these proteins for use as immunogens. The antigenic peptide of a marker protein comprises at least 8 amino acid residues of an amino acid sequence encoded by a gene set forth in Tables I-V, and

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encompasses an epitope of a marker protein such that an antibody raised against the peptide forms a specific immune complex with the marker protein. Preferably, the antigenic peptide comprises at least 10 amino acid residues, more preferably at least 15 amino acid residues, even more preferably at least 20 amino acid residues, and most preferably at least 30 amino acid residues. Preferred epitopes encompassed by the antigenic peptide are regions of the marker protein that are located on the surface of the protein, e.g., hydrophilic regions, as well as regions with high antigenicity.

An anti-marker protein antibody (e.g., monoclonal antibody) can be used to isolate a marker protein of the invention by standard techniques, such as affinity chromatography or immunoprecipitation. An anti-marker protein antibody can facilitate the purification of natural marker proteins from cells and of recombinantly produced marker proteins expressed in host cells. Moreover, an anti-marker protein antibody can be used to detect marker protein (e.g., in a cellular lysate or cell supernatant) in order to evaluate the abundance and pattern of expression of the marker protein. Anti-marker protein antibodies can be used diagnostically to monitor protein levels in tissue as part of a clinical testing procedure, e.g., to, for example, determine the efficacy of a given treatment regimen. Detection can be facilitated by coupling (i.e., physically linking) the antibody to a detectable substance. Examples of detectable substances include various enzymes, prosthetic groups, fluorescent materials, luminescent materials, bioluminescent materials, and radioactive materials. Examples of suitable enzymes include horseradish peroxidase, alkaline phosphatase, -galactosidase, or acetylcholinesterase; examples of suitable prosthetic group complexes include streptavidin/biotin and avidin/biotin; examples of suitable fluorescent materials include umbelliferone, fluorescein, fluorescein isothiocyanate, rhodamine, dichlorotriazinylamine fluorescein, dansyl chloride or phycoerythrin; an example of a luminescent material includes luminol; examples of bioluminescent materials include luciferase,

luciferin, and aequorin, and examples of suitable radioactive material include  $^{125}\text{I}$ ,  $^{131}\text{I}$ ,  $^{35}\text{S}$  or  $^3\text{H}$ .

The nucleic acid and protein sequences of the present invention can further be used as a "query sequence" to perform a search against public databases to, for example, identify other family members or related sequences. Such searches can be performed using the NBLAST and XBLAST programs (version 2.0) of Altschul, et al. (J. Mol. Biol. 1990;215:403-10). BLAST nucleotide searches can be performed with the NBLAST program, score=100, wordlength=12 to obtain nucleotide sequences homologous to nucleic acid molecules of the invention. BLAST protein searches can be performed with the XBLAST program, score=50, wordlength=3 to obtain amino acid sequences homologous to marker protein molecules of the invention. To obtain gapped alignments for comparison purposes, Gapped BLAST can be utilized as described in Altschul et al., (1997) Nucleic Acids Res. 25(17):3389-3402. When utilizing BLAST and Gapped BLAST programs, the default parameters of the respective programs (e.g., XBLAST and NBLAST) can be used. See <http://www.ncbi.nlm.nih.gov>.

It will be appreciated that non-coding sequences, such as promoter or other regulatory sequences of marker genes may be used as probes in the context of the present invention. Thus, the expression of groups of functionally related genes, responsive to similar signals important to the pathogenesis or progression of multiple sclerosis, may be assessed.

It will be appreciated that in certain cases the genes themselves can serve as markers. For example, mutations in the nucleic acid sequence of a gene (e.g., non-sense, mis-sense deletion and the like) which result in lower expression levels of the gene or lower activity of the gene product may be correlated with MS. Similarly, a duplication of the gene, which can result in higher expression levels or mutations which result in higher activity can also be correlated with MS.

## ANNOTATED MARKED-UP SPECIFICATION

Detection of the presence or number of copies of all or a part of a marker gene of the invention may be performed using any method known in the art. Typically, it is convenient to assess the presence, quantity and quality of genomic DNA by Southern analysis, in which total DNA from a cell or tissue sample is extracted, is hybridized with a labeled probe (e.g., a complementary DNA molecule), and the probe is detected. The label group can be a radioisotope, a fluorescent compound, an enzyme, or an enzyme co-factor. Other useful methods of DNA detection and/or quantification include direct sequencing, gel electrophoresis, column chromatography, and quantitative PCR, as is known by one skilled in the art.

In cases where detection involves discrete marker sets, the detection method of the present invention preferably employs marker probes which are conjugated to a solid support. For example, polynucleotide probes capable of specifically hybridizing with polynucleotide markers of the present invention (e.g., mRNA) may be coupled to an array (e.g., a GeneChip array for hybridization analysis), to a resin (e.g., a resin which can be packed into a column for column chromatography), or a matrix (e.g., a nitrocellulose matrix for northern blot analysis). The immobilization of molecules complementary to the marker(s), either covalently or noncovalently, permits a discrete analysis of the presence or activity of each marker in a sample. In an array, for example, polynucleotides complementary to each member of a marker set may individually be attached to different, known locations on the array (region-specific arrays). The array may be hybridized with, for example, polynucleotides extracted from a blood sample obtained from a subject. The hybridization of polynucleotides extracted from the sample with the array at any location on the array can be detected, and thus the presence or quantity of the marker in the sample can be ascertained. In a preferred embodiment, a "GeneChip" array is employed (e.g., an Affymetrix type array). Similarly, Western analyses may be performed on immobilized antibodies specific for

different polypeptide markers hybridized to a protein sample from a subject.

It will also be apparent to one skilled in the art that the probes of the array need not bind with the entire marker molecule. A probe designed to bind a portion of the marker of sufficient length for detection purposes (e.g., for hybridization), for example, a portion of the marker which is 7, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 100 or more nucleotides or amino acids in length may be sufficient for detection purposes.

Polynucleotide probes can be synthesized using any known synthesis method. Preferably, synthesis is effected using on-chip lithography methodology in a manner similar to that utilized for the synthesis of Affymetrix chips ([www.affymetrix.com](http://www.affymetrix.com)). Additional methods of array production and methodology are described in detail in the U.S. Patent Applications cited in the Background section hereinabove.

Antibody probes useful for detecting polypeptide markers can be generated using various well known techniques. For example, monoclonal antibodies which can be used per se or as a basis for antibody fragments (scFv, Fab etc) can be synthesized using isolated Hybridomas. In such an approach, a protein corresponding to a marker of the invention is isolated (e.g., by purification from a cell in which it is expressed or by transcription and translation of a nucleic acid encoding the protein in vivo or in vitro using known methods. A vertebrate, preferably a mammal such as a mouse, rat, rabbit, or sheep, is immunized using the isolated protein or protein fragment. The vertebrate may optionally (and preferably) be immunized at least one additional time with the isolated protein or protein fragment, so that the vertebrate exhibits a robust immune response to the protein or protein fragment. Splenocytes are isolated from the immunized vertebrate and fused with an immortalized cell line to form hybridomas, using any of a variety of methods well known in the art. Hybridomas formed in this manner are then screened

using standard methods to identify one or more hybridomas which produce an antibody which specifically binds with the protein or protein fragment.

The invention also includes an array comprising a marker(s) of the present invention. The array can be used to assay expression of one or more genes in the array.

In one embodiment, the array can be used to assay gene expression in a tissue of multiple sclerosis patients at different stages of the disease to ascertain stage specificity of genes in the array. In this manner, more than about 30,000 genes can be simultaneously assayed for expression. This allows a profile to be developed showing a battery of genes specifically expressed in one or more stages of the disease.

In addition to such qualitative determination, the invention allows the quantitation of gene expression. Thus, not only stage specificity, but also the level of expression of a battery of stage specific genes is ascertainable. Thus, genes can be grouped on the basis of their expression per se, and level of expression in that stage of the disease.

The detection arrays described herein are preferably packaged in kits identified for use in detecting MS in general or for detecting specific stages of MS. The kit can further include reagents suitable for the detection of polynucleotide hybridization or antibody binding and instructions for effecting diagnosis using the kit components and suitable detection hardware (e.g., detection microscope) and software (e.g., detection and analysis software). For further description of such hardware and software and detection reagents please see [www.affymetrix.com](http://www.affymetrix.com).

Thus, the present invention provides methods useful for diagnosing MS including specific stages or states of the disease and also a risk of developing the disease.

These methods involve isolating a sample from a subject (e.g., a sample containing T-cells), detecting the presence, quantity, and/or activity of one or



more markers of the invention in the sample relative to a normal sample. Observing a significant increase or decrease in one or more markers in the test sample indicates the presence or risk of presence of MS.

Using specific marker sets, the present invention also provides methods  
5 of assessing the severity or stage of MS in a subject.

As detailed hereinabove, a major concern in treatment of multiple sclerosis is accurate early diagnosis following the first acute attack. At present, clinical studies indicate that only 40-50% of individuals suffering a first acute attack will progress to clinically definite MS. Thus, treatment protocols most  
10 commonly suspend treatment of these patients defined as probable MS, until the appearance of a second attack, which may entail years of waiting and uncertainty. It will be appreciated that early and accurate detection of the portion of probable MS patients likely to progress to further stages of the disease can save undue suffering and expense, and, more importantly, provide  
15 early treatment and a better prognosis for the portion of probable MS patients likely to progress to more severe stages. The present invention provides, for the first time, marker genes for probable MS, as well as for relapsing vs. remitting MS.

The present invention also provides methodology which can be used to  
20 assess the efficacy of an MS treatment regimen and/or the effect of environmental factors or diet on the progression of MS.

These methods involve isolating a sample from a subject (e.g., a sample containing T-cells) suffering from MS who is undergoing treatment which includes drug therapy, exposure to a predetermined environmental condition  
25 and/or a specific diet, detecting the presence, quantity, and/or activity of one or more markers of the invention in test samples obtained from the subject prior to and following treatment or in a test sample obtained from the subject relative to a sample obtained from an individual suffering from MS who is not undergoing any treatment and/or relative to a sample obtained from an individual not

suffering from MS and undergoing treatment. The levels of markers in the samples are compared, and significant increases or decreases in one or more markers in the test sample following treatment relative to the other samples are observed, and correlated with the severity or stage of MS. By assessing whether MS has been lessened or alleviated, the ability of the treatment or therapy to treat MS is also determined.

It will be appreciated that the present invention also provides methods of treating (e.g., inhibiting) the formation or progression of MS. These methods involve isolating a sample from a subject (e.g., a sample containing PMBCs such as T-cells), detecting the presence, quantity, and/or activity of one or more markers of the invention in the sample relative to a normal sample and observing significant increases or decreases in one or more markers in the test sample. For markers that are significantly decreased in expression or activity, the subject may be administered that expressed marker protein, or may be treated by the introduction of mRNA or DNA corresponding to the decreased marker (e.g., by gene therapy), to thereby increase the levels of the marker protein in the subject. For markers that are significantly increased in expression or activity, the subject may be administered mRNA or DNA antisense to the increased marker (e.g., by gene therapy), or may be administered antibodies specific for the marker protein, to thereby decrease the levels of the marker protein in the subject. In this manner, the subject may be treated for MS or MS related condition.

In another embodiment, the methods further involve obtaining a control biological sample (e.g., nondiseased tissue) from a control subject, contacting the control sample with a compound or agent capable of detecting marker protein, mRNA, or genomic DNA, such that the presence of marker protein, mRNA or genomic DNA is detected in the biological sample, and comparing the presence of marker protein, mRNA or genomic DNA in the control sample

with the presence of marker protein, mRNA or genomic DNA in the test sample.

The invention also provides methods for identifying modulators, i.e., candidate or test compounds or agents (e.g., peptides, peptidomimetics, peptoids, small molecules or other drugs) which (a) bind to the marker, or (b) have a modulatory (e.g., stimulatory or inhibitory) effect on the activity of the marker or, more specifically, (c) have a modulatory effect on the interactions of the marker with one or more of its natural substrates (e.g., peptide, protein, hormone, co-factor, or nucleic acid), or (d) have a modulatory effect on the expression of the marker. Such assays typically comprise a reaction between the marker and one or more assay components. The other components may be either the test compound itself, or a combination of test compound and a natural binding partner of the marker. The test compounds of the present invention may be obtained from any available source, including systematic libraries of natural and/or synthetic compounds. Test compounds may also be obtained by any of the numerous approaches in combinatorial library methods known in the art, including: biological libraries; peptoid libraries (libraries of molecules having the functionalities of peptides, but with a novel, non-peptide backbone which are resistant to enzymatic degradation but which nevertheless remain bioactive; (see, e.g., Zuckermann et al., 1994, J. Med. Chem. 37:2678-85); spatially addressable parallel solid phase or solution phase libraries; synthetic library methods requiring deconvolution; the 'one-bead one-compound' library method; and synthetic library methods using affinity chromatography selection. The biological library and peptoid library approaches are limited to peptide libraries, while the other four approaches are applicable to peptide, non-peptide oligomer or small molecule libraries of compounds (Lam, 1997, Anticancer Drug Des. 12:145).

Additional objects, advantages, and novel features of the present invention will become apparent to one ordinarily skilled in the art upon

examination of the following examples, which are not intended to be limiting. Additionally, each of the various embodiments and aspects of the present invention as delineated hereinabove and as claimed in the claims section below finds experimental support in the following examples.

5

### EXAMPLES

Reference is now made to the following examples, which together with the above descriptions, illustrate the invention in a non limiting fashion.

Generally, the nomenclature used herein and the laboratory procedures  
10 utilized in the present invention include molecular, biochemical, microbiological and recombinant DNA techniques. Such techniques are thoroughly explained in the literature. See, for example, "Molecular Cloning: A laboratory Manual" Sambrook et al., (1989); "Current Protocols in Molecular Biology" Volumes I-III Ausubel, R. M., ed. (1994); Ausubel et al., "Current  
15 Protocols in Molecular Biology", John Wiley and Sons, Baltimore, Maryland (1989); Perbal, "A Practical Guide to Molecular Cloning", John Wiley & Sons, New York (1988); Watson et al., "Recombinant DNA", Scientific American Books, New York; Birren et al. (eds) "Genome Analysis: A Laboratory Manual Series", Vols. 1-4, Cold Spring Harbor Laboratory Press, New York (1998);  
20 methodologies as set forth in U.S. Pat. Nos. 4,666,828; 4,683,202; 4,801,531; 5,192,659 and 5,272,057; "Cell Biology: A Laboratory Handbook", Volumes I-III Cellis, J. E., ed. (1994); "Culture of Animal Cells - A Manual of Basic Technique" by Freshney, Wiley-Liss, N. Y. (1994), Third Edition; "Current Protocols in Immunology" Volumes I-III Coligan J. E., ed. (1994); Stites et al.  
25 (eds), "Basic and Clinical Immunology" (8th Edition), Appleton & Lange, Norwalk, CT (1994); Mishell and Shiigi (eds), "Selected Methods in Cellular Immunology", W. H. Freeman and Co., New York (1980); available immunoassays are extensively described in the patent and scientific literature, see, for example, U.S. Pat. Nos. 3,791,932; 3,839,153; 3,850,752; 3,850,578;

3,853,987; 3,867,517; 3,879,262; 3,901,654; 3,935,074; 3,984,533; 3,996,345;  
4,034,074; 4,098,876; 4,879,219; 5,011,771 and 5,281,521; "Oligonucleotide  
Synthesis" Gait, M. J., ed. (1984); "Nucleic Acid Hybridization" Hames, B. D.,  
and Higgins S. J., eds. (1985); "Transcription and Translation" Hames, B. D.,  
5 and Higgins S. J., eds. (1984); "Animal Cell Culture" Freshney, R. I., ed.  
(1986); "Immobilized Cells and Enzymes" IRL Press, (1986); "A Practical  
Guide to Molecular Cloning" Perbal, B., (1984) and "Methods in Enzymology"  
Vol. 1-317, Academic Press; "PCR Protocols: A Guide To Methods And  
Applications", Academic Press, San Diego, CA (1990); Marshak et al.,  
10 "Strategies for Protein Purification and Characterization - A Laboratory Course  
Manual" CSHL Press (1996); all of which are incorporated by reference as if  
fully set forth herein. Other general references are provided throughout this  
document. The procedures therein are believed to be well known in the art and  
are provided for the convenience of the reader. All the information contained  
15 therein is incorporated herein by reference.

## ***MATERIALS AND METHODS***

***Subjects*** - Blood was obtained from patients or controls after written  
informed consent. *For comparison of healthy controls and MS patients, and*  
20 *between MS patients in acute relapse or remission:* Gene expression profiles of  
26 patients (20 females, mean age  $41.0 \pm 2.5$  years) with definite diagnosis of  
MS according to Poser criteria (8), a relapsing-remitting disease course, and  
brain magnetic resonance imaging ascertaining the diagnosis (9) were  
compared with eighteen (18) age-matched healthy subjects (16 females). *For*  
25 *comparison of transcriptional profiles in MOG-reactive T-cells:* Four MS  
female patients (mean age  $38 \pm 4.2$  years, mean disease duration  $9.3 \pm 3.3$  years)  
having a definite MS according to Poser criteria (10), a relapsing-remitting  
disease course, neurological disability evaluated by the expanded disability  
status scale (EDSS, 11) between 2 to 5.0, and brain MRI supporting the

diagnosis of MS, and three age- and sex-matched healthy controls were included in the study. None of the patients received immunomodulatory drugs or steroid treatment for at least three months prior to when blood was drawn. The studies were approved by the institutional review board and the Israel Ministry of Health.

**mRNA preparation** - Total RNA was isolated from Ficoll™ isolated Peripheral Blood Mononuclear Cells (PBMC) or from MOG-stimulated T cell lines ( $2 \times 10^7$  cells) by ice-cold TRIZOL Reagent (Gibco, BRL). Poly-A mRNA was isolated using a mini-kit (Oligotex, Qiagen) and used as a template for double-stranded cDNA synthesis using oligo (dT)-24 primers containing a T7 RNA polymerase promoter site added to the 3'- end (Genset). After phenol/chloroform extraction cDNA was used as a template for *in vitro* transcription (Ambion T7 Megascript system) with biotin labeled nucleotides (Enzo Diagnostics). Labeled cRNA was fragmented, quantified by spectrophotometer, and hybridized to the microarrays.

**Microarray gene analysis** - Each Genechip (U95Av2) which carries probes for 12,625 (or U133A with 22,000 for patients with probable MS diagnosis) transcripts was hybridized with 10µg/200µl hybridization mix, stained and scanned (Hewlett Packard, GeneArray-TM scanner G2500A) according to manufacturer protocol (Affymetrix Inc, Santa Clara, CA). Scaling procedure was performed to an average intensity of 600 per gene. A value of 20 was assigned to all measurements lower than 20. *For comparison of healthy controls and MS patients, and between MS patients in acute relapse or remission:* All data was normalized by dChip software and fold ratios were calculated for each gene of the samples against geometric means of the matched controls. *For comparison of transcriptional profiles in MOG-reactive T-cells:* Genes that did not have at least one average difference intensity value  $\geq 100$  or were present at least once by Affymetrix criteria, were not included in the analysis.

**Data analysis** - The analysis was performed according to the analytical approach as previously described (24-26). Genechip 4 software (Affymetrix Inc, Santa Clara, CA) was used for analysis of the scanned arrays. Fold ratios were calculated for each gene of the samples against the geometric mean of matched controls. *For comparison of transcriptional profiles in MOG-reactive T-cells:* To determine the most informative genes threshold number of misclassifications (TNoM) score was applied. This score counts the number of classification errors that occur between compared groups for each gene of the dataset. The best threshold (TNoM=0) implies that no errors have been counted and the distinction between the two groups in relation to the expression level of a specific gene is maximal. To select a group of strongly differential expression, t-test p-value (comparing expression levels of genes from MS patients vs. healthy controls) were also computed. Genes with TNoM = 0, fold-change >1.5 (either up or down regulated) and corresponded t-test P value < 0.05, were designated as most informative. *For comparison of healthy controls and MS patients, and between MS patients in acute relapse or remission:* The data was analyzed by the classic parametric t-test, and the following non-parametric tests: (i) Threshold number of misclassifications (TNoM) method and (ii) INFO score that measures the misclassifications made by a simple threshold in terms of the information lost. Analysis was performed between MS patients and the control group for each gene of the dataset as well as between subgroups of patients. Only informative MS related genes ( $p < 0.05$  in all three statistical tests) were included. To retrieve the most informative genes, the False Discovery Rate (FDR) method (14) that ranks and tests all “P” values against different thresholds was used. The degree of significance by the Bonferroni threshold method, which evaluates the allowed error probability divided by the number of genes measured, and ensures that each and every validated scoring event is indeed a significant event, was also calculated.

***Validation Strategy*** - To further assess the predictive power of the data sets, computerized analysis by the Leave-One-Out-Cross-Validation (LOOCV) statistical method was performed. The method simulates removal of a single sample every trial and trains on the rest. The procedure is repeated until each  
5 sample is left out once and the number of correct and incorrect predictions is counted.



***Accurate Gene Expression Profiles of MS***

In order to provide an accurate, reliable profile of gene markers for diagnosis and evaluation of MS, DNA chip analysis was used to compare multiple gene expression patterns of PBMCs from patients with different clinical forms of MS. After informed consent blood was obtained from 26 patients (20 females, mean age  $41.0 \pm 2.5$  years) with definite diagnosis of MS according to Poser criteria, a relapsing-remitting disease course, and brain magnetic resonance imaging ascertaining the diagnosis. Eighteen age-matched healthy subjects (16 females) served as controls. PBMC gene expression of 12,625 human genes was analyzed as described hereinabove, using Ficoll™ for preparation of PBMCs and total RNA purification and sample preparation according to the instructions of Affymetrix, Inc (Affymetrix, Santa Clara CA, USA). In order to determine the most informative genes, unique computerized scoring methods, as yet not applied to analysis of data regarding MS, were employed. In brief, a gene is designated as informative based on the degree to which its tissue expression level is predictive of an independent classification of the tissue sample as “diseased” or “not diseased”, as previously described by Ben-Dor et al (J Comput Biol 2000;7:559-63) and applied to the analysis of breast cancer and melanoma using cDNA arrays (for review see Freidman N et al Ernst Schering Res Found Wkshp 2002;38:109-31). The scores used in this study were:

***TNoM (Total Number of Misclassifications)*** - the number of classification errors committed when using the best simple threshold to distinguish between two classes (diseased or not diseased) based on the expression levels of a specific gene.

***INFO*** - an estimate of the uncertainty remaining about accuracy of a sample classification (diseased or not diseased) after the incorporation of

predictions based on expression of an individual gene is given (a lower “INFO” score indicates a higher predictive value for a given gene).

***Gaussian (t-test)*** - The overlap between distributions of expression levels for genes in two classes. The score is based on normality assumptions.

5 One of the advantages of the analytic methods used here is their amenability to rigorous statistical benchmarking. Using this unique analysis, the number of informative genes per score expected in a random classification can be calculated, and then this estimated number of high scoring (or informative) genes can be compared to the actual number of informative genes  
10 (per score) measured in a dataset.

Comparison of the gene expression profiles shows that gene expression of PBMC in MS patients is significantly different from that in healthy subjects. Under the null-hypotheses that the separation of the samples is random despite genetic heterogeneity between tested groups, observed significant  
15 overabundance of informative genes was observed (Fig. 1A). The difference between expected and observed number of genes with significant p value in all 3 statistical tests (t-test, TNoM, INFO) performed, indicates that the diversity in gene expression observed in PBMC is biologically significant.

The predictive power of the data sets results was assessed by performing  
20 computerized error estimates based on *leave-one-out cross validation* (LOOCV) trials. The results disclosed only 3 classification errors. This low rate of error estimates suggest that the gene expression signature in MS is reliable for the diagnosis of the disease using peripheral blood and confirms that the patterns we observed accurately represent significant biologic phenomena  
25 associated with MS. The false discovery rate (FDR) method distinguished 1249 most informative genes that pass 95% FDR on all three statistical tests (t-test, TNoM, INFO) at  $p < 0.05$  (Fig. 1B and Table I).

Confirmation of gene microarray expression findings was performed by RT-PCR for the following five randomly selected genes: EGFL5, P44, GS3686,

MX1 and CCR2. Significant correlations (coefficients ranged from 0.76 to 0.98) were found between the relative number of expression genes analysis and the RT-PCR profile. The data from microarray hybridizations was further tested against the strict Bonferroni threshold method from all three statistical tests, as described hereinabove, resulting in 300 top scoring genes that distinguish between MS and healthy subjects. (Table II).

The 1249 most informative genes (681 up-regulated, 569 down-regulated, Table I) consist of inflammatory, apoptosis and cell signaling pathways components, cytokines, antigen presentation molecules and chemokines as well as number of expressed sequence tags (ESTs).

***Over-expressed genes in MS*** - The most abundant over-expressed transcripts unique to MS include: (i) **SLAM** (signaling lymphocyte activation molecule) a member of the immunoglobulin gene superfamily that is involved in T-cell stimulation. SLAM potentiates T-cell expansion and was described as CD28 independent co-stimulatory molecule, selectively increasing interferon gamma production and dysregulating type 1 and type 2 cytokine production in MS upon T-cell receptor activation. The surprising observation of SLAM upregulation suggests an enhanced proliferation of autoreactive T cells in MS patients; (ii) **LEF1** (lymphoid enhancer-binding factor 1) one of the transcriptional factors expressed in pre-B and T cells, and known to be associated with T cell receptor (TCR) stimulation and apoptosis survival of pro-B cells (19); (iii) **LRP5** (low density lipoprotein receptor-related protein 5) a of cell receptor protein required for LEF1 activation; (iv) **LILRB** (leukocyte immunoglobulin-like receptor), a protein that binds MHC class I molecules and delivers a negative signal inhibiting killing by natural killer and regulatory T cells; (v) **LY75** (lymphocyte antigen 75) an endocytotic receptor used by dendritic cells to direct captured antigens from the extracellular space to a specialized antigen-processing compartment; and (vi) **CDW52**, a 21-28 kDa glycopeptide antigen expressed on lymphocytes and macrophages known to be

a target for complement-mediated insult, inducing pro-inflammatory cytokine (e.g. TNF alpha and interferon gamma) production. Other up-regulated genes are members of the anti-apoptotic pathways, and include **PIP5K1-gamma** (Phosphatidylinositol-4-phosphate 5-kinase, type 1, gamma) and **MAP4** (Microtubule-associated protein 4). Over-expression of transcripts belonging to the papain cysteine proteinase family **CTSK** (Cathepsin K) and **CTSB** (Cathepsin B) was also observed.

***Down-regulated genes in MS*** - Abundant down-regulated transcripts unique to MS that were identified include **IL1B** (Interleukin 1 beta), an important inflammatory cytokine; **TRAF6**, which is essential for IL1 signaling; and **SCYA20**, known to be mediated by IL1B. Decreased mRNA expression of **IL1B** was strengthened by the down regulation of **IL1R** (type1 receptor), **IL1RAP** (receptor accessory protein) and **IL1RN** (receptor antagonist).

Other important down-regulated genes include **TGFB1** (Transforming growth Factor beta 1) and **SKI** (v-ski sarcoma viral oncogene homologue) a component of TGFB signaling pathway, both known to inhibit cell proliferation. Thus, their under expression may contribute to autoreactive T cell expansion. Members of epidermal growth factor family such as **VEGF** (Vascular endothelial growth factor), **IGFBP4** (Insulin-like growth factor binding protein 4) and **EREG** (epiregulin) were also down regulated. Additionally, mRNA expression of members of the steroid-thyroid receptors family including nuclear receptor subfamily 4, group A members 1, 2 and 3 (**NR4A1**, **NR4A2**, **NR4A3**) were significantly reduced. Down regulation of these genes may inhibit apoptosis through Fas ligand and tumor necrosis factor alpha or through early response of T-cell receptor induced apoptosis of thymocytes, thus mimicking positive selection.

Taken together, the identification of profiles of up- (overexpressed) and down regulated genes specific to MS indicates the suitability of the methods of the present invention for identifying validated and significant molecular

signatures of PBMC gene expression in MS. While reducing the present invention to practice, it was observed that the specific disease related genes include transcripts involved in T cell activation and expansion and anti-apoptotic mediators, indicating failure of apoptosis-related elimination of autoreactive T cells.

## EXAMPLE II

### *Stage Specific Gene Expression Profiles of MS*

Accurate clinical tools for specific diagnosis of disease stages in MS are presently unavailable. In order to provide a useful profile of the clinically defined stages of MS, specific gene expression was evaluated in relation to clinical disease phases. Significant overabundance was found between the number of observed and expected genes expressed in MS patients during an acute relapse and in remission (Fig. 2A). Using the methods described hereinabove, the 743 most informative genes (302 up-regulated and 441 down-regulated) with  $p\text{-value} < 0.05$  in all three scores (t-test, TNoM, INFO) that differentiated relapse from remission (Fig 2B, Table III) were identified.

***Over-expressed genes in acute relapse of MS, compared to patients in remission*** - The most informative over-expressed genes included CTSL (Lysosomal cystein protease L, cathepsin L) known to play a role in MHC class II antigen presentation, responsible for quantitative and qualitative difference in peptide repertoires displayed by MHC class II molecules, and having a regulatory role in epitope generation for antigens subsets. Moreover, in vitro, proteolytic CTSL processed myelin basic protein into more than 60 different 20-40-mers species, and myelin-associated glycoprotein was described as a substrate for CTSL like proteases. These data, taken together with our observation that CTSL mRNA was over expressed in the active stage of MS, offer a biochemical basis for the immunodominant epitope spreading implicated in the pathogenesis of MS. Also up-regulated is SCYA2 (Monocyte

specific chemoattractant protein, MCP1), essential for monocyte and NK cells recruitment to site of inflammatory injury. Augmented **SCYA2** expression level in the CNS has been identified at the onset of EAE. Other abundant up-regulated transcripts identified by the method of the present invention include

5 **CD79A**, **DDIT3** (DNA-damage inducible transcript 3); **E2-EPF** (Ubiquitin carrier protein) and **COX6**.

*Downregulated genes in acute relapse of MS, compared to patients in remission* - From the downregulated gene transcripts in acute relapse vs. remission it is important to note several programmed cell death-related genes

10 like **CCNG1** (Cyclin G1) identified as p53 dependent apoptosis; **PDCD2** (Programmed cell death 2) expressed in immature thymocytes; and **CTLA1** (Cytotoxic T lymphocyte associated serine esterase 1), crucial for the rapid induction of apoptosis by cytotoxic cells. Also prominently downregulated during acute relapse was **JAK1** (Janus kinase 1), a protein tyrosine kinase

15 reported to be obligatory for several cytokines receptors, important for regulation of acute cellular response.

The results of the functional annotation of the transcriptional motifs that distinguish between acute MS relapse and remission suggest that many of the genes are involved in cellular recruitment and epitope spreading, as well as

20 important to immunologic mechanisms related to escape from regulatory surveillance and augmentation of cell survival potential. Thus, it can be suggested that during the acute inflammatory process of the disease there is a failure of the immune regulatory cells to inhibit autoreactivity and the self-expansion of the non-restrained autoreactive T cells further lead to a vicious

25 cycle of on going inflammatory activity.

It is evident from the gene-clustering map (Fig 2B) that during an acute relapse no significant differences are found between relapse treated vs. relapse untreated patients. Such a result is of great clinical significance, since this may indicate that during an acute MS exacerbation the major gene expression

transcripts are related to relapse associated genes and the effect of therapy is negligible. However, during remission treatment effect was more pronounced and this effect on gene suppression in treated patients was evident.

Of even greater significance is the demonstration, for the first time, of a specific gene expression profile of the “probable” stage of MS. As described hereinabove, “probable” MS precedes definitive clinical diagnosis, and is characterized by diverse neurological symptoms including unilateral loss of vision, true vertigo, ataxia, paresthesia, incontinence, diplopia, dysarthria or paralysis. Probable MS patients may suffer undiagnosed for years. In order to provide a method for accurate diagnosis of probable MS, in advance of onset of clinical symptoms, gene expression in PBMC samples of 13 probable MS patients were compared with that of samples from 5 age-matched healthy controls. RNA preparation, hybridization to MicroArray and analysis of results was performed as described for Examples 1 and 2, and in the Material and Methods section hereinabove.

As is shown in Table V, a specific “probable” MS profile of gene expression distinguishes PBMCs of diseased and healthy individuals.

Thus, there is demonstrated, for the first time, gene expression profiles providing criteria for distinguishing between stages of MS in humans, for example, between relapsing and remitting MS, probable MS and healthy individuals. Further, the groups of up- and down-regulated genes identified herein may be used for investigation of mechanisms of disease and disease progression in MS.

### **EXAMPLE III**

#### ***Gene Expression Profiles in Treatment of MS***

The effect of immunomodulatory treatment on gene expression in MS patients was investigated by comparison analysis of gene transcripts between treated and untreated patients. Surprisingly, despite the variety of

immunomodulatory treatments and differences between patients in relation to treatment duration, the microarray methods described herein, treatment-related gene transcripts that differentiated between treated and untreated patients were detected. Treatment-specific gene expression is mainly associated with phosphorylation and signal transduction. Thus, gene microarray technology can be a powerful tool in evaluating and monitoring clinical correlations of effects of treatment, and determining prognosis.

Thus, data presented herein demonstrate for the first time distinct and significant fingerprint cluster in MS patients that differentiates them from healthy subjects. Moreover, the stringent and specific fingerprint is predictive for the diagnosis of MS and is suitable for guiding the selection of patients for early treatment. Additionally, separate gene expression patterns were identified between acute MS relapse and remission, and treatment effects could also be identified. The methods described herein may also be used to offer superior insight into the biological mechanisms involved in the disease as well as improving functional gene characterization and transcription sites detection, important for identification of new targets for treatment and drug identification, such as T cell activation and expansion and anti-apoptotic genes like SLAM, PIP5K1-g and the NR4A1-3 steroid-thyroid receptors subfamily.

#### ***EXAMPLE IV***

##### ***Gene Expression Profiles of MOG-Reactive T-cells from MS Patients***

Although MS appears to be caused by autoimmune T cells activated against myelin self-antigens, myelin-reactive T-cells have been demonstrated in healthy subjects as well. Thus, distinction between disease-related and non-disease related T-cell myelin reactivity is of great clinical and investigational importance. In order to determine a profile of MS-related T-cell genes, gene expression in MOG-reactive T-cells from 4 MS patients having relapsing-



remitting disease course, positive Poser criteria, and neurological disability, and 3 healthy age-matched controls was compared.

Using the microarray methods described herein, gene expression patterns obtained in MOG reactive T cell lines from MS patients detected 150 transcripts with  $TNoM=0$ ,  $p=0.057$  compared to healthy subjects (Figure 4). These high scoring gene transcripts were defined as significant MOG reactive MS-related genes. Hierarchical clustering of gene expression patterns from MS patients and healthy controls is presented in Figure 2, panel A. From the 150 genes with absolutely different expression levels, 43 most informative genes were further identified and clustered. These include 18 up-regulated and 25 down-regulated genes (Figure 2, panel B).

Investigation of the known biological function of these genes (Table V) shows a great diversity of activity (A Pie-chart diagram showing the functional groups of genes included in this evaluation is presented in Figure 3). Included are genes coding for proteins involved in the regulation and execution of apoptosis, growth factors, mediators of signal transduction pathways, molecules that participate in inflammation and also genes encoding heat shock proteins, transcription factors and components of different biochemical pathways.

*Upregulated Genes in MS-Derived T-cells* - Up-regulated in MS patient-derived T-cell lines are several anti-apoptotic genes such as **BCL2**, **lifeguard**, and the MAP-activated kinase **MAP3K12**. The **BCL2** gene product is an important member of the anti-apoptotic proteins. Lifeguard (**LFG**), is a molecule that inhibits cell death mediated by the Fas (CD95) receptor through a unique mechanism that down regulates apoptotic signals from Fas and is associated with human autoimmune lymphoproliferative syndrome (ALPS) and in lymphoproliferative lupus-like syndrome in mice.

The **MAP3K12** gene is associated with programmed cell death and encodes a polypeptide that catalyzes the phosphorylation of **BAD**, a member of the **BCL2** anti-apoptosis protein family. Increased expression of **IGFBP3** and

**VEGF** was also demonstrated in MS-derived T cells. **IGFBP-3** has been implicated in the expansion of disease related T-cell, associated with acute brain lesions of MS patients. Thus, in addition to increased survival potential, our findings suggest that autoreactive T cells in MS also have an expansion advantage compared with T cells from healthy individuals.

Furthermore, migration of autoimmune T cells into the brain would be expected to be assisted by over-expression of transcripts encoding for vascular endothelial growth factor (**VEGF**) in lines from MS patients. **VEGF** enhances vascular permeability and may facilitate migration of lymphocytes into the CNS and induction of inflammatory reactions in the brain.

***Downregulated Genes in MS-Derived T-cells*** - The profile of gene expression in MS-derived T-cells (Figure 4, and Table V) indicates a suppression of apoptosis-related functions in the diseased state. One aspect of failure to induce apoptosis in the MS-derived T cell lines is the significant down-regulation of the gene encoding for the pro-apoptotic molecule **TNF**. A reduction in **TNF** could also contribute to a reduction in the ratio of pro- and anti-apoptotic transcript expression in the anti-MOG T cell lines from MS patients compared to healthy controls. Indeed, inadequate apoptosis present in MS autoreactive T cell lines could lead to insufficient deletion of autoimmune activated T cell clones and increase susceptibility to autoimmunity.

In addition, effectors of MHC class I presentation were revealed to be down-regulated in MS patients' cells. Such down-regulated expression includes the transcript for the **proteasome PA28 complex**, known to be a principal provider of MHC class I-presented peptides in antigen presenting cells, and **HSP70 1A and 1B** variants. **TNF** is also known to stimulate MHC class I presentation in addition to induction of apoptosis. The findings presented herein indicate that a weaker antigenic MHC class I presenting capability might distinguish MS-patient derived T cell lines from their healthy counterparts, and providing powerful diagnostic tools. It is conceivable that a lower expression of

MHC class-I on CD4 autoimmune T cells might enable them to escape regulation by CD8 cells that recognize autoimmune idiotypes.

Taken together the combined effects of down-regulation of apoptosis associated genes, up regulation of anti-apoptotic genes, increased expansion capability by autoreactive T cells and enhanced ability to penetrate the CNS may lead to perpetuated pathologic cellular proliferation and tissue destruction within the CNS characteristic of MS, along with increased resistance to regulation. The specific gene expression profiles described herein can define some of the requirements for an individual to develop MS, and thus have important predictive value, especially in determining MS in the “probable” stage. It is noteworthy that despite activation in vitro with the same MOG epitope, anti-MOG T cells from healthy subjects did not attain the gene expression profile that characterized the MS patient-derived cells. The findings support the concept that not all autoimmune T cells are equal; autoimmune T cells from MS patients follow a unique pattern of T cell activation that appears to be more resilient to apoptosis and can support long term survival. Although T cell lines derived from MS patients and healthy donors responded to the same autoantigen, were both activated T cell populations that proliferated extensively in the presence of IL-2, the gene expression imprints that are unique to each group were preserved. These findings indicate the existence of different T-cell activation mechanisms. The nature of the stimuli that generate aberrant autoimmune T-cell gene expression has yet to be identified in order to determine whether their formation is merely the result of the chronic immune stimulation driven by other factors in MS, or whether such T cells function as primary drivers of the MS process. Characterization of such driver T cells, dictating the state of immunity/autoimmunity can also greatly contribute to understanding autoimmunity and possibly also for designing effective treatments for MS.

52  
ANNOTATED MARKED-UP SPECIFICATION  
**TABLES I-V**

**Table I: Gene Expression Profile from PBMCs of MS vs. Healthy**

Affymetrix ID no:SEQ-ID- NO:	Identifier	TNOM PValue	Info PValue	t-Test PValue	Log Fold Change	Symbol
40289 at1	U78107	8.55E-11	1.94E-11	4.04E-12	-0.43769	NAPG
39402 at2	M15330	8.55E-11	8.55E-11	2.49E-12	-2.13825	IL1B
41499 at3	X15218	8.55E-11	8.55E-11	1.40E-10	-1.41501	SKI
19531 at4	AF024710	8.55E-11	8.55E-11	1.13E-12	-1.95537	VEGF
189 s at5	U09937	1.84E-09	4.16E-10	2.04E-09	-1.21578	HSUROKR7
38873 at6	AB018343	1.84E-09	4.16E-10	9.05E-12	0.383078	KIAA0800
41169 at7	X74039	1.84E-09	4.16E-10	1.51E-10	-0.67381	PLAUR
242 at8	M64571	1.84E-09	1.84E-09	2.41E-11	0.416659	MAP4
40385 at9	U64197	1.84E-09	1.84E-09	2.95E-10	-0.62373	SCYA20
19831 at10	X68452	2.57E-08	2.93E-09	9.12E-11	-0.26618	CCND2
32133 at11	AB011161	2.57E-08	2.93E-09	9.64E-11	0.63432	PIP5K1C
37579 at12	L47738	2.57E-08	2.93E-09	7.54E-09	0.31646	PIR121
12091 at13	U78798	2.57E-08	2.93E-09	1.11E-06	-0.3172	TRAF6
40365 at14	M63904	2.57E-08	7.16E-09	5.38E-09	-0.59612	GNA15
35227 at15	U72066	2.57E-08	7.16E-09	4.33E-08	-0.34482	RBBP8
37936 at16	AI184802	2.64E-07	1.61E-08	2.67E-09	-0.21576	HPRP4P
41831 at17	AF077820	2.64E-07	1.61E-08	2.91E-08	0.656852	LRP5
279 at18	L13740	2.64E-07	1.61E-08	5.83E-08	-1.45891	NR4A1
39561 at19	AL008583	2.64E-07	1.61E-08	1.12E-08	0.250082	
34857 at20	Z24724	2.64E-07	1.61E-08	5.96E-09	-1.10426	
34476 r at21	D30783	2.57E-08	2.19E-08	8.95E-10	-1.65011	EREG
34405 at22	U47927	2.57E-08	2.19E-08	5.53E-09	0.545592	USP5
32021 at23	AI560890	2.57E-08	2.19E-08	1.80E-07	0.179028	
37185 at24	Y00630	2.57E-08	3.69E-08	6.65E-09	-2.38485	SERPINB2
34210 at25	N90866	2.64E-07	8.23E-08	2.76E-08	0.304525	CDW52
36100 at26	AF022375	2.64E-07	8.23E-08	1.87E-11	-1.35847	VEGF
36680 at27	M24895	2.11E-06	1.08E-07	1.72E-08	0.476779	AMY2B
33598 r at28	AF054176	2.11E-06	1.08E-07	6.47E-09	-0.58138	C1orf7
33943 at29	L20941	2.64E-07	1.08E-07	1.78E-06	-0.58618	FTH1
11251 s at30	L05424	2.11E-06	1.08E-07	2.27E-09	-0.58081	HUMSCG19
39797 at31	AB002347	2.11E-06	1.08E-07	7.19E-10	0.371731	KIAA0349
41431 at32	AB023153	2.11E-06	1.08E-07	1.82E-08	0.895842	KIAA0936
40870 g at33	AF069517	2.11E-06	1.08E-07	4.91E-07	0.399638	RBM6
32444 at34	X69392	2.64E-07	1.08E-07	1.10E-08	0.297444	RPL26
36060 at35	U51920	2.11E-06	1.08E-07	7.01E-08	-0.28142	SRP54
11391 at36	L22075	2.64E-07	1.71E-07	1.10E-08	-0.55736	GNA13
15201 s at37	X04500	2.64E-07	1.71E-07	3.43E-10	-2.12121	IL1B
39417 at38	AB028951	2.64E-07	1.71E-07	8.78E-09	0.543028	KIAA1028
35926 s at39	AF004230	2.64E-07	1.71E-07	3.06E-07	0.349166	LILRB1
35165 at40	AF070582	2.64E-07	1.71E-07	3.23E-08	-0.19773	MGC13033

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3918	at41	X66363	2.64E-07	1.71E-07	6.53E-07	-0.24505	PCTK1
1603	g at42	L33881	2.64E-07	1.71E-07	5.06E-08	-0.59585	PRKCI
3351	at43	U33017	2.64E-07	1.71E-07	5.20E-07	0.373581	SLAM
3898	at44	AJ007042	2.64E-07	1.71E-07	2.10E-07	0.170935	WHSC1
3975	at45	Z93930	2.64E-07	1.71E-07	2.42E-05	-0.39839	XBP1
3723	at46	AF079167	2.64E-07	1.71E-07	7.37E-10	-1.93249	
3147	s at47	AF098641	2.64E-07	1.71E-07	1.56E-07	-0.41172	
1181	at48	HG3227- HT3404	2.64E-07	1.71E-07	1.68E-08	-0.25361	
3810	at49	U78302	2.64E-07	1.71E-07	2.41E-08	0.329878	
3470	at50	U91543	2.64E-07	2.49E-07	2.01E-07	0.478678	CHD3
3399	at51	M22919	2.64E-07	2.49E-07	9.52E-08	-0.81053	MYL6
4179	at52	AB029015	2.64E-07	2.49E-07	5.37E-09	0.695063	PLCE2
3753	at53	Z11697	1.37E-05	4.08E-07	3.55E-06	-1.21033	CD83
3203	at54	AL096780	1.37E-05	4.08E-07	2.13E-06	0.34487	CHKL
3253	at55	U51205	1.37E-05	4.08E-07	2.65E-07	-0.76279	COP9
3593	g at56	Y08683	1.37E-05	4.08E-07	4.71E-06	0.492738	CPT1B
3296	at57	S52028	2.11E-06	4.08E-07	9.62E-08	-0.81662	CTH
3736	at58	X63368	2.11E-06	4.08E-07	2.30E-08	-0.55432	DNAJB2
3782	at59	M84443	1.37E-05	4.08E-07	4.08E-07	0.303567	GALK2
496	at60	U32324	1.37E-05	4.08E-07	3.21E-08	0.334966	IL11RA
4107	at61	AB011115	1.37E-05	4.08E-07	3.39E-07	0.382809	KIAA0543
3885	at62	AB014535	1.37E-05	4.08E-07	1.04E-06	0.285282	KIAA0635
4148	at63	X02152	1.37E-05	4.08E-07	4.63E-08	-0.75601	LDHA
3781	at64	AF007130	2.11E-06	4.08E-07	2.51E-06	0.391811	LOC54104
3527	at65	AF007151	1.37E-05	4.08E-07	3.25E-06	0.468343	MMS19L
3728	at66	X82209	2.11E-06	4.08E-07	1.37E-09	-0.45281	MN1
3806	at67	X79882	1.37E-05	4.08E-07	1.78E-07	0.520965	MVP
3827	at68	U91616	1.37E-05	4.08E-07	1.27E-07	-0.80419	NFKBIE
3891	at69	U41815	1.37E-05	4.08E-07	2.16E-07	-0.96931	NUP98
3278	at70	AB011108	1.37E-05	4.08E-07	4.39E-07	0.453498	PRP4
3631	at71	L40377	1.37E-05	4.08E-07	3.49E-07	-0.79409	SERPINB8
3915	at72	X99656	1.37E-05	4.08E-07	1.68E-06	-0.23553	SH3GL1
4072	at73	AJ010059	2.11E-06	4.08E-07	2.95E-06	0.2235	SIT
3380	at74	J02973	1.37E-05	4.08E-07	2.93E-07	-1.30804	THBD
3271	at75	N90862	1.37E-05	4.08E-07	3.28E-08	0.43576	VAMP8
4072	s at76	Y14768	1.37E-05	4.08E-07	7.26E-08	0.248383	
3772	at77	U47414	2.11E-06	7.73E-07	2.31E-06	0.370736	CCNG2
3225	at78	AB002386	2.11E-06	7.73E-07	5.34E-09	0.586117	EZH1
3842	at79	U29344	2.11E-06	7.73E-07	2.35E-07	-0.43842	FASN
3545	s at80	AF015553	2.11E-06	7.73E-07	2.61E-07	0.61214	GTF2I
3757	at81	AB028981	2.11E-06	7.73E-07	5.34E-07	0.282288	KIAA1058
197	at82	U29656	2.11E-06	7.73E-07	7.52E-08	0.353186	NME3
430	at83	X00737	2.11E-06	7.73E-07	5.21E-08	-0.67074	NP
3615	s at84	U29185	2.11E-06	7.73E-07	1.56E-07	-1.08006	PRNP
3969	at85	AB007960	2.11E-06	7.73E-07	7.96E-06	0.447772	SH3GLB1

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162	ht86	U44839	2.11E-06	7.73E-07	2.54E-07	-0.97008	USP11
3825	s at87	U84007	7.44E-05	1.28E-06	0.000235	0.236422	AGL
1347	at88	S78187	7.44E-05	1.28E-06	1.95E-05	0.203265	CDC25B
3846	at89	X82153	7.44E-05	1.28E-06	2.27E-06	0.47844	CTSK
4133	at90	AL050084	7.44E-05	1.28E-06	5.26E-05	0.509331	DC8
3271	at91	X62535	1.37E-05	1.28E-06	5.68E-07	0.243937	DGKA
3855	at92	AB026436	7.44E-05	1.28E-06	0.000219	-0.7589	DUSP10
4142	at93	M98833	7.44E-05	1.28E-06	1.52E-06	0.434288	FLI1
3319	at94	AW051579	1.37E-05	1.28E-06	7.58E-07	0.593476	FLJ10512
4026	at95	X16706	7.44E-05	1.28E-06	1.23E-06	-1.09747	FOSL2
4132	at96	U90917	1.37E-05	1.28E-06	3.89E-07	0.433406	FOXM1
3460	g at97	M24194	7.44E-05	1.28E-06	4.38E-06	0.560895	GNB2L1
3939	at98	AJ002190	7.44E-05	1.28E-06	2.17E-08	0.33775	GNPAT
3661	at99	X87949	7.44E-05	1.28E-06	4.05E-07	-0.54468	HSPA5
3530	at100	U96876	7.44E-05	1.28E-06	3.54E-06	-0.45317	INSIG1
3834	at101	AF038564	1.37E-05	1.28E-06	2.05E-07	-0.40446	ITCH
3403	at102	D80011	7.44E-05	1.28E-06	4.20E-07	-0.35073	KIAA0189
3585	g at103	AI950382	1.37E-05	1.28E-06	1.63E-07	-0.74128	KIAA0585
3645	at104	AB023235	7.44E-05	1.28E-06	1.43E-05	0.311216	KIAA1018
3686	at105	AB029038	7.44E-05	1.28E-06	7.62E-05	0.364386	KIAA1115
3345	at106	U24166	7.44E-05	1.28E-06	7.52E-06	-0.45293	MAPRE1
4036	at107	X61498	7.44E-05	1.28E-06	8.80E-07	-0.49884	NFKB2
190	at108	U12767	7.44E-05	1.28E-06	2.84E-07	-1.23483	NR4A3
3574	at109	U85245	7.44E-05	1.28E-06	4.57E-07	0.365266	PIP5K2B
3812	at110	U50928	7.44E-05	1.28E-06	4.72E-06	0.302213	PKD2
525	g at111	U13695	7.44E-05	1.28E-06	1.11E-05	0.805607	PMS1
3221	at112	AA203527	1.37E-05	1.28E-06	1.18E-07	0.281992	RPP20
3802	at113	J02939	7.44E-05	1.28E-06	2.16E-07	-0.87844	SLC3A2
4088	s at114	N30151	7.44E-05	1.28E-06	5.05E-05	0.393521	STX16
3435	at115	U52960	2.11E-06	1.28E-06	1.51E-07	-0.84863	SURB7
3275	at116	AF030249	1.37E-05	1.28E-06	1.98E-07	0.534547	
4072	g at117	AL022398	7.44E-05	1.28E-06	8.09E-08	0.919627	
1877	g at118	HG1103- HT1103	1.37E-05	1.28E-06	1.16E-07	-0.39165	
3741	at119	D30758	2.11E-06	1.80E-06	1.58E-05	0.27738	CENTB1
3193	s at120	U75968	2.11E-06	1.80E-06	4.36E-06	0.139542	DDX11
3832	at121	M69199	2.11E-06	1.80E-06	1.45E-07	-1.9021	G0S2
3978	at122	U20982	2.11E-06	1.80E-06	1.20E-08	-0.67125	IGFBP4
4049	g at123	AF040707	2.11E-06	1.80E-06	3.57E-07	0.289845	NPR2L
3225	at124	AB007927	2.11E-06	1.80E-06	2.12E-07	0.323787	RERE
3938	at125	AA902713	2.11E-06	1.80E-06	1.44E-06	0.474378	
3210	f at126	U66063	2.11E-06	2.24E-06	4.70E-07	0.277185	CAMK2G
4121	s at127	D13891	2.11E-06	2.24E-06	4.57E-05	-0.20577	ID2
3997	at128	AL050087	2.11E-06	2.24E-06	1.27E-07	-0.31279	KIAA1785
3597	g at129	N23137	2.11E-06	2.24E-06	2.06E-07	0.247311	MPHOSPH9
4056	at130	N42007	2.11E-06	2.24E-06	9.19E-05	0.167986	NUP50

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1231	at131	M74525	2.11E-06	2.24E-06	3.50E-07	-0.61792	UBE2B
3779	at132	AF035281	2.11E-06	2.24E-06	4.87E-07	0.472445	
3849	at133	U11732	1.37E-05	3.17E-06	3.04E-07	-0.22574	ETV6
3466	at134	AB002348	1.37E-05	3.17E-06	2.49E-07	0.576346	KIAA0350
4043	at135	AB007891	1.37E-05	3.17E-06	3.99E-05	0.196376	KIAA0431
3925	at136	AI754391	1.37E-05	3.17E-06	1.72E-06	-0.27657	KLF12
3523	at137	D50406	1.37E-05	3.17E-06	2.65E-05	0.461907	RECK
3514	at138	AF070617	1.37E-05	3.17E-06	3.23E-07	0.323494	
3979	at139	M23114	2.11E-06	4.08E-06	1.59E-07	-0.96141	ATP2A2
1445	at140	AF014958	2.11E-06	4.08E-06	1.05E-07	-0.42152	CCRL2
3663	at141	AF067853	1.37E-05	4.31E-06	5.02E-06	0.361707	ADSL
1252	at142	M73547	1.37E-05	4.31E-06	9.20E-08	0.438897	D5S346
3929	at143	W28319	1.37E-05	4.31E-06	1.50E-05	0.294631	FBLN1
3965	s at144	AB007895	1.37E-05	4.31E-06	9.61E-07	0.186643	KIAA0435
3531	at145	AB014579	1.37E-05	4.31E-06	6.08E-08	0.367966	MGEA5
3167	s at146	AF019083	1.37E-05	4.31E-06	8.34E-07	0.17011	PTENP1
3885	at147	AL080141	1.37E-05	4.31E-06	2.42E-07	0.330868	SEC31B-1
3381	at148	AF110377	1.37E-05	4.31E-06	3.05E-05	0.361232	TRRAP
3626	at149	AB002448	1.37E-05	4.31E-06	2.45E-07	0.468926	
3423	at150	AL049787	1.37E-05	4.31E-06	7.11E-06	0.311278	
1527	s at151	U50527	1.37E-05	4.31E-06	5.11E-06	0.416543	
3358	at152	Z32860	1.37E-05	4.31E-06	7.81E-06	0.133192	
3956	at153	AF094481	1.37E-05	5.01E-06	2.74E-07	-0.29045	CGGBP1
493	at154	U29171	1.37E-05	5.01E-06	1.10E-06	-0.6032	CSNK1D
3829	at155	AL050196	1.37E-05	5.01E-06	2.00E-05	-0.24688	DKFZP586D2223
1788	s at156	U48807	1.37E-05	5.01E-06	4.97E-08	-0.93178	DUSP4
3793	at157	U15552	1.37E-05	5.01E-06	1.67E-05	-0.68094	HSU15552
280	g at158	L13740	1.37E-05	5.01E-06	9.10E-08	-0.61928	NR4A1
3607	at159	AF010309	1.37E-05	5.01E-06	7.36E-07	-0.28533	PIG3
3851	at160	Y18004	1.37E-05	5.01E-06	4.19E-07	-0.9465	SCML2
3477	at161	R90942	1.37E-05	5.01E-06	1.05E-05	-0.17696	ST6GALNACIV
3332	at162	W28612	1.37E-05	5.01E-06	1.70E-06	-0.25519	
4088	at163	X64330	7.44E-05	6.03E-06	2.27E-06	0.297851	ACLY
3722	at164	U49844	7.44E-05	6.03E-06	3.67E-07	0.47168	ATR
3776	at165	AB015019	7.44E-05	6.03E-06	2.75E-07	-0.24515	BAIAP2
3923	at166	AF006513	0.000344	6.03E-06	4.48E-05	-1.45973	CHD1
806	at167	U56998	0.000344	6.03E-06	3.70E-06	-0.74294	CNK
3206	g at168	S68134	0.000344	6.03E-06	8.37E-07	-1.64652	CREM
3206	at169	S68134	0.000344	6.03E-06	4.35E-06	-2.47105	CREM
3206	at170	S68271	0.000344	6.03E-06	3.03E-06	-2.07185	CREM
3897	at171	AF021819	0.000344	6.03E-06	4.41E-05	0.298771	DJ-1
3862	at172	AF029777	1.37E-05	6.03E-06	8.27E-07	0.290159	GCN5L2
3770	at173	U28811	0.000344	6.03E-06	1.33E-06	0.32855	GLG1
1237	at174	S81914	0.000344	6.03E-06	4.18E-07	-1.59146	IER3
3511	at175	X80821	0.000344	6.03E-06	8.51E-05	-0.5606	KIAA0874

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1774	at176	L06895	7.44E-05	6.03E-06	1.12E-05	-0.1928	MAD
4066	at177	D78579	1.37E-05	6.03E-06	4.25E-07	-1.65638	NR4A3
4066	g at178	D78579	7.44E-05	6.03E-06	9.62E-07	-1.61438	NR4A3
4065	at179	U12767	0.000344	6.03E-06	2.55E-07	-2.13744	NR4A3
210	at180	M95678	0.000344	6.03E-06	2.00E-06	0.432923	PLCB2
3186	at181	X51804	0.000344	6.03E-06	7.23E-05	-0.19283	PMI
3685	at182	W28743	0.000344	6.03E-06	2.78E-06	-0.28926	PP1628
3222	at183	X17042	7.44E-05	6.03E-06	6.64E-06	-0.36481	PRG1
3218	at184	M80244	0.000344	6.03E-06	2.72E-06	-0.8522	SLC7A5
3188	s at185	AF001294	1.37E-05	6.03E-06	1.23E-06	-0.76359	TSSC3
3852	f at186	D49677	7.44E-05	6.03E-06	4.18E-06	0.198707	U2AF1RS2
4124	at187	AB011004	0.000344	6.03E-06	1.41E-06	-1.34073	UAPI
4143	at188	AB011113	1.37E-05	6.03E-06	3.74E-07	0.444795	WDR7
4148	at189	AC002394	0.000344	6.03E-06	0.001473	0.17105	
3433	at190	AL021707	0.000344	6.03E-06	4.95E-06	-2.21462	
4072	at191	AL022398	7.44E-05	6.03E-06	1.10E-07	0.79713	
4034	at192	AL049442	0.000344	6.03E-06	8.09E-06	0.621935	
3692	at193	U17760	0.000344	6.03E-06	4.25E-06	-0.84472	
3237	at194	L22569	1.37E-05	8.66E-06	1.52E-06	0.318129	CTSB
3613	at195	AL031058	1.37E-05	8.66E-06	0.000375	0.149046	DSP
4140	at196	AL080172	1.37E-05	8.66E-06	1.89E-05	0.098968	FLJ21919
3402	at197	M36821	1.37E-05	8.66E-06	2.21E-07	-0.36334	GRO3
3982	at198	U06631	1.37E-05	8.66E-06	1.31E-05	0.486332	H326
3749	at199	L16499	1.37E-05	8.66E-06	5.12E-06	0.374296	HHEX
4126	at200	X53586	1.37E-05	8.66E-06	3.40E-07	0.51291	ITGA6
3503	at201	D87466	1.37E-05	8.66E-06	1.49E-07	0.466046	KIAA0276
3955	at202	N98667	1.37E-05	8.66E-06	3.38E-07	0.367127	KIAA1696
3232	at203	X99142	1.37E-05	8.66E-06	1.24E-06	-0.29773	KRTHB6
3816	at204	AF011333	1.37E-05	8.66E-06	1.55E-05	0.342503	LY75
4013	at205	U70735	1.37E-05	8.66E-06	1.82E-06	0.249185	MOV34-34KD
3384	at206	U02020	1.37E-05	8.66E-06	1.37E-06	-1.13863	PBEF
4013	at207	M31724	1.37E-05	8.66E-06	0.000172	-0.2601	PTPN1
3257	at208	U29175	1.37E-05	8.66E-06	1.90E-06	0.266342	SMARCA4
3689	at209	AL031846	1.37E-05	8.66E-06	0.000418	0.38404	
3909	s at210	Y12059	7.44E-05	1.51E-05	5.64E-06	-0.46008	BRD4
3297	at211	U49187	7.44E-05	1.51E-05	1.48E-06	0.671467	C6orf32
424	at212	X66945	7.44E-05	1.51E-05	1.91E-07	-0.35494	FGFR1
3218	at213	M60922	7.44E-05	1.51E-05	4.47E-08	0.39657	FLOT2
3602	at214	AL049409	7.44E-05	1.51E-05	1.10E-06	0.714173	LEF1
3543	at215	L16794	7.44E-05	1.51E-05	2.23E-05	-0.27553	MEF2D
1652	at216	U77735	7.44E-05	1.51E-05	5.66E-06	0.574142	PIM2
3973	at217	U10117	7.44E-05	1.51E-05	4.07E-06	0.563673	SCYE1
3141	at218	AF023614	1.37E-05	1.51E-05	4.79E-07	-0.20744	TACI
3150	at219	S73591	1.37E-05	1.51E-05	4.68E-06	0.414777	VDUP1
3496	at220	AF052160	7.44E-05	1.51E-05	1.67E-06	0.623021	
642	at221	L76528	7.44E-05	1.51E-05	6.14E-06	-0.39652	



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39749	at222	U51007	7.44E-05	1.51E-05	1.49E-06	0.309996	
32567	at223	D10704	1.37E-05	1.75E-05	4.69E-07	-0.36791	CHK
40607	at224	U97105	1.37E-05	1.75E-05	6.56E-07	1.00615	DPYSL2
554	at225	U03634	1.37E-05	1.75E-05	1.00E-06	-0.21467	LBC
39037	at226	L13773	1.37E-05	1.75E-05	6.44E-07	0.247919	MLLT2
1373	at227	M31523	1.37E-05	1.75E-05	2.09E-06	0.36898	TCF3
37189	at228	AL023553	1.37E-05	1.75E-05	2.51E-06	0.226635	
32130	at229	W25984	7.44E-05	2.35E-05	1.42E-05	0.482493	ACTA1
36586	at230	U78521	0.000344	2.35E-05	2.53E-05	0.320909	AIP
34898	at231	M30704	0.000344	2.35E-05	1.65E-05	-0.37795	AREG
35765	at232	X91504	0.001377	2.35E-05	0.00016	0.233217	ARFRP1
32563	at233	U51478	7.44E-05	2.35E-05	6.10E-07	-0.58	ATPIB3
38201	at234	U21551	0.001377	2.35E-05	7.60E-05	-0.3088	BCAT1
40790	at235	AB004066	0.000344	2.35E-05	6.57E-05	-0.60905	BHLHB2
2036	s at236	M59040	0.001377	2.35E-05	2.82E-06	-0.46271	CD44
40619	at237	M91670	0.001377	2.35E-05	0.001649	-0.47538	E2-EPF
38868	at238	U43774	0.000344	2.35E-05	8.80E-07	-0.39938	FCAR
41177	at239	AW024285	0.000344	2.35E-05	6.99E-06	-0.42098	FLJ12443
40615	at240	AA780049	7.44E-05	2.35E-05	7.39E-07	0.54912	FLJ21439
36484	at241	AI935146	0.000344	2.35E-05	2.05E-06	-0.46726	GALNT3
35289	at242	AJ011679	0.001377	2.35E-05	4.67E-05	0.243248	GAPCENA
34724	at243	AI670100	7.44E-05	2.35E-05	7.70E-07	0.22677	GRLF1
40113	at244	D87119	7.44E-05	2.35E-05	1.80E-06	0.425625	GS3955
31977	at245	M92432	0.000344	2.35E-05	4.31E-05	0.363033	GUCY2D
38771	at246	D50405	0.001377	2.35E-05	0.000688	0.387926	HDAC1
1636	g at247	U07563	7.44E-05	2.35E-05	4.91E-07	-0.25016	HSABLGR3
37679	at248	Y10313	0.001377	2.35E-05	0.003201	-0.35345	IFRD1
33281	at249	D63485	0.000344	2.35E-05	9.04E-05	0.31177	IKKE
41524	at250	L08488	0.000344	2.35E-05	7.54E-06	-0.37883	INPP1
39753	at251	X06256	1.37E-05	2.35E-05	4.89E-07	-0.7357	ITGA5
37619	at252	D42084	0.001377	2.35E-05	7.39E-06	0.222195	KIAA0094
39783	at253	D43947	7.44E-05	2.35E-05	0.000104	0.269941	KIAA0100
40013	at254	AB007870	0.000344	2.35E-05	0.000108	-0.64362	KIAA0410
35850	at255	AI950382	0.000344	2.35E-05	0.000122	-0.65985	KIAA0585
34353	at256	AB014548	7.44E-05	2.35E-05	2.77E-05	0.431229	KIAA0648
31909	at257	AB018297	0.001377	2.35E-05	0.000836	0.195704	KIAA0754
34751	at258	AI970189	0.000344	2.35E-05	6.16E-07	-0.75934	KIAA0997
39057	at259	L04733	0.001377	2.35E-05	8.84E-07	0.306455	KNS2
1857	at260	AF010193	7.44E-05	2.35E-05	1.26E-07	-1.4705	MADH7
36126	at261	U18919	7.44E-05	2.35E-05	1.05E-05	0.271231	NBP
40823	s at262	U85430	0.001377	2.35E-05	0.000315	0.317554	NFATC3
544	at263	S76638	7.44E-05	2.35E-05	7.47E-07	-0.35416	NFKB2
36963	s at264	AL050353	0.000344	2.35E-05	4.42E-06	0.179352	OIP2
33703	at265	L20971	0.001377	2.35E-05	0.00089	-0.49725	PDE4B
41281	s at266	AF060502	7.44E-05	2.35E-05	0.000114	-0.18239	PEX10
36480	at267	X80497	0.001377	2.35E-05	0.000245	0.313262	PHKA2

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3809	at268	AL050371	0.000344	2.35E-05	3.70E-06	0.493288	PISD
3354	s at269	U77718	7.44E-05	2.35E-05	6.60E-06	0.352996	PNN
3974	at270	U52427	0.001377	2.35E-05	0.000282	0.329478	POLR2G
3491	at271	U94778	0.000344	2.35E-05	1.18E-05	0.282929	PSTPIP1
843	at272	U48296	0.001377	2.35E-05	0.00011	-0.89871	PTP4A1
1491	at273	M31166	0.001377	2.35E-05	0.000256	-0.38484	PTX3
3515	at274	AJ001016	7.44E-05	2.35E-05	1.08E-05	-0.28245	RAMP3
3984	at275	AF040965	0.001377	2.35E-05	0.001101	-0.38591	RES4-25
3667	at276	J04130	0.000344	2.35E-05	3.02E-06	-0.62071	SCYA4
3314	s at277	U81800	0.000344	2.35E-05	4.28E-05	-0.49523	SLC16A3
4159	at278	AB000734	0.001377	2.35E-05	0.000883	-0.58764	SSI-1
3977	at279	U38847	7.44E-05	2.35E-05	9.91E-07	0.222946	TARBP1
3847	at280	M63180	0.001377	2.35E-05	1.03E-05	-0.33301	TARS
3343	at281	D15050	0.001377	2.35E-05	0.000192	-1.12874	TCF8
1106	s at282	M12959	7.44E-05	2.35E-05	1.61E-06	0.128482	TRA@
429	at283	X00734	0.001377	2.35E-05	0.000384	-0.34516	TUBB5
3188	at284	AJ001340	0.001377	2.35E-05	4.21E-05	0.181208	U3-55K
3772	at285	Y08614	0.001377	2.35E-05	6.92E-05	0.305659	XPO1
3784	at286	AF054589	0.000344	2.35E-05	1.98E-06	0.945394	
3373	at287	AL022398	7.44E-05	2.35E-05	2.40E-06	0.493166	
3899	at288	AL031178	7.44E-05	2.35E-05	3.18E-05	0.410068	
3368	at289	AL049782	7.44E-05	2.35E-05	7.66E-07	0.237794	
1171	s at290	HG1471- HT3923	0.001377	2.35E-05	0.000519	0.203133	
706	at291	HG4582- HT4987	7.44E-05	2.35E-05	4.63E-07	-0.39588	
3206	at292	U96629	0.001377	2.35E-05	1.00E-04	0.277256	
3721	at293	D64110	7.44E-05	2.58E-05	7.49E-05	-0.51036	BTG3
3258	at294	J04111	7.44E-05	2.58E-05	0.000108	-1.60276	JUN
1895	at295	J04111	7.44E-05	2.58E-05	4.68E-05	-1.14014	JUN
4148	s at296	X56681	7.44E-05	2.58E-05	0.000112	-0.48711	JUND
3803	at297	D21853	7.44E-05	2.58E-05	0.000403	-0.25594	KIAA0111
3692	at298	X80692	7.44E-05	2.58E-05	3.44E-05	-1.1939	MAPK6
545	at299	S76638	7.44E-05	2.58E-05	5.23E-05	-0.46026	NFKB2
3386	at300	U65785	7.44E-05	2.58E-05	9.67E-06	-0.2389	ORP150
3342	s at301	AB016247	7.44E-05	2.58E-05	3.13E-05	-0.57287	SC5DL
3840	at302	M55153	7.44E-05	2.58E-05	4.77E-06	-0.27465	TGM2
553	at303	U02570	1.37E-05	2.81E-05	1.26E-06	0.432431	ARHGAP1
3390	at304	X04366	1.37E-05	2.81E-05	5.11E-06	0.346076	CAPN1
1499	at305	L10413	1.37E-05	2.81E-05	6.46E-06	0.207231	FNTA
3973	at306	AF055001	1.37E-05	2.81E-05	9.78E-06	-0.9457	HERPUD1
4150	at307	A1523538	1.37E-05	2.81E-05	0.004471	-0.1584	HIPK3
414	at308	X59373	1.37E-05	2.81E-05	1.31E-05	-0.22992	HOXD10
3934	at309	X99209	1.37E-05	2.81E-05	2.65E-05	0.239777	HRMT1L1
202	at310	M65217	1.37E-05	2.81E-05	1.02E-05	0.33377	HSF2
3698	at311	X17025	1.37E-05	2.81E-05	1.45E-05	-0.44351	ID11
3731	at312	M35878	1.37E-05	2.81E-05	4.29E-05	-0.25267	IGFBP3

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4172 <del>8</del>	at313	D63486	1.37E-05	2.81E-05	9.69E-06	0.235319	KIAA0152
3791 <del>4</del>	at314	AB002303	1.37E-05	2.81E-05	1.86E-05	-0.39642	KIAA0305
535 <del>5</del>	at315	U20816	1.37E-05	2.81E-05	4.92E-05	-0.20145	NFKB2
1269 <del>9</del>	at316	M61906	1.37E-05	2.81E-05	5.93E-06	-0.39875	PIK3R1
524 <del>4</del>	at317	U13695	1.37E-05	2.81E-05	1.31E-05	0.362255	PMS1
3585 <del>9</del>	f at318	U38979	1.37E-05	2.81E-05	3.95E-05	0.158105	PMS2L9
382 <del>2</del>	at319	X70218	1.37E-05	2.81E-05	2.44E-06	-0.74691	PPP4C
3997 <del>5</del>	at320	AC002400	1.37E-05	2.81E-05	2.28E-06	-0.25834	
3633 <del>6</del>	s at321	AC005390	1.37E-05	2.81E-05	2.99E-05	-0.24231	
3418 <del>8</del>	at322	AF070606	1.37E-05	2.81E-05	1.48E-06	-0.89337	
1842 <del>2</del>	at323	HG2724- HT2820	1.37E-05	2.81E-05	5.17E-06	-1.33814	
3333 <del>4</del>	at324	X84194	7.44E-05	4.67E-05	6.38E-05	0.23578	ACYP1
3260 <del>7</del>	at325	AF039656	0.00482	4.67E-05	0.000251	-0.73273	BASP1
3711 <del>2</del>	at326	AB002384	0.00482	4.67E-05	4.22E-05	0.548091	C6orf32
3377 <del>4</del>	at327	X98172	7.44E-05	4.67E-05	5.29E-07	0.507556	CASP8
486 <del>6</del>	at328	U60521	7.44E-05	4.67E-05	8.13E-06	-0.36762	CASP9
1924 <del>4</del>	at329	U11791	0.00482	4.67E-05	0.000363	-1.0232	CCNH
3569 <del>5</del>	at330	U67615	0.00482	4.67E-05	0.000948	1.23433	CHS1
4141 <del>1</del>	at331	AF037339	0.000344	4.67E-05	1.59E-05	-0.33549	CLPTM1
1789 <del>9</del>	at332	U65928	7.44E-05	4.67E-05	2.85E-07	0.408918	COPS5
4130 <del>9</del>	g at333	U37408	7.44E-05	4.67E-05	3.06E-05	0.157458	CTBP1
3712 <del>7</del>	at334	AB023143	0.00482	4.67E-05	0.001982	0.215415	DEFCAP
4123 <del>3</del>	at335	AB014888	0.001377	4.67E-05	0.000204	-0.34841	DNAJB6
3803 <del>7</del>	at336	M60278	0.00482	4.67E-05	3.33E-05	-0.9007	DTR
4060 <del>6</del>	at337	U88629	0.000344	4.67E-05	9.58E-07	-0.32607	ELL2
1885 <del>5</del>	at338	M31899	0.000344	4.67E-05	0.000339	0.274507	ERCC3
3979 <del>9</del>	at339	M94856	7.44E-05	4.67E-05	4.99E-06	-0.23847	FABP5
3618 <del>8</del>	at340	X86779	0.001377	4.67E-05	1.08E-05	0.140032	FASTK
1772 <del>2</del>	s at341	L00634	0.00482	4.67E-05	0.00019	0.205256	FNTA
3982 <del>2</del>	s at342	AF078077	0.000344	4.67E-05	1.44E-05	-1.47649	GADD45B
717 <del>7</del>	at343	D87119	7.44E-05	4.67E-05	4.62E-06	0.557116	GS3955
3393 <del>3</del>	at344	X17644	7.44E-05	4.67E-05	6.72E-06	-0.71963	GSPT1
3739 <del>9</del>	at345	L19314	0.00482	4.67E-05	0.000922	-0.35113	HRY
1796 <del>6</del>	s at346	U05681	7.44E-05	4.67E-05	3.37E-06	-0.35383	HSBCL3S2
1610 <del>0</del>	s at347	J00139	0.00482	4.67E-05	0.000196	-0.12797	HUMFOL5
3264 <del>4</del>	at348	M24283	0.000344	4.67E-05	3.71E-06	-1.32611	ICAM1
1737 <del>7</del>	s at349	M62403	7.44E-05	4.67E-05	5.57E-07	-0.53749	IGFBP4
1369 <del>9</del>	s at350	M28130	7.44E-05	4.67E-05	8.02E-07	-2.27292	IL8
371 <del>1</del>	at351	Z56281	0.001377	4.67E-05	0.000243	0.309173	IRF3
2061 <del>1</del>	at352	L12002	7.44E-05	4.67E-05	1.23E-06	0.286717	ITGA4
3227 <del>7</del>	at353	K00558	0.001377	4.67E-05	0.002498	0.12909	K-ALPHA-1
3484 <del>4</del>	at354	AL044599	0.001377	4.67E-05	8.81E-05	0.321294	KIAA0222
4138 <del>7</del>	r at355	AB002344	0.000344	4.67E-05	1.04E-05	-0.39307	KIAA0346
3736 <del>6</del>	at356	AB007889	7.44E-05	4.67E-05	2.33E-05	0.255643	KIAA0429
4124 <del>4</del>	at357	AB007916	0.00482	4.67E-05	0.000147	0.493018	KIAA0447

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37375 at358	AB014538	0.000344	4.67E-05	1.98E-06	-0.63923	KIAA0638
34831 at359	AF055004	7.44E-05	4.67E-05	9.29E-05	0.200537	KIAA0763
40670 at360	AI148772	0.000344	4.67E-05	4.18E-06	-1.02619	KYNU
35160 at361	AF064491	0.00482	4.67E-05	0.000148	-0.54215	LDB1
1846 at362	L78132	7.44E-05	4.67E-05	5.15E-07	0.358576	LGALS8
963 at363	X83441	7.44E-05	4.67E-05	6.75E-06	-0.17796	LIG4
39428 at364	AF055581	7.44E-05	4.67E-05	5.69E-06	-1.05728	LNK
40456 at365	AL049963	0.000344	4.67E-05	8.36E-07	-0.74421	LOC64116
32246 g at366	AF014837	0.00482	4.67E-05	0.000636	0.325349	M6A
1891 at367	D14497	0.001377	4.67E-05	3.68E-05	-0.58619	MAP3K8
1439 s at368	X75346	7.44E-05	4.67E-05	1.99E-05	-0.37877	MAPKAPK2
38278 at369	M62324	0.001377	4.67E-05	5.46E-05	-0.44552	MRF-1
41220 at370	AB023208	0.000344	4.67E-05	1.37E-05	0.293901	MSF
38035 at371	AF072928	0.001377	4.67E-05	1.13E-05	-0.3089	MTMR6
38692 at372	AF045451	0.000344	4.67E-05	6.34E-06	-0.40149	NAB1
1378 g at373	M58603	7.44E-05	4.67E-05	1.28E-06	-0.73537	NFKB1
519 g at374	U07132	0.00482	4.67E-05	0.001821	-0.14679	NR1H2
37628 at375	X75918	7.44E-05	4.67E-05	3.50E-05	-1.61126	NR4A2
547 s at376	S77154	0.00482	4.67E-05	0.000304	-1.33785	NR4A2
33752 at377	AB020657	0.00482	4.67E-05	2.75E-05	-0.50544	NS1-BP
1959 at378	D88674	7.44E-05	4.67E-05	6.26E-06	-0.99818	OAZIN
39948 at379	U27459	0.00482	4.67E-05	3.39E-05	0.430016	ORC2L
358 at380	AF000545	7.44E-05	4.67E-05	3.48E-06	-0.85393	P2Y10
38270 at381	AF005043	7.44E-05	4.67E-05	2.70E-06	0.408592	PARG
38365 at382	AF026086	0.000344	4.67E-05	2.66E-06	0.297942	PEX1
36864 at383	AJ001625	7.44E-05	4.67E-05	9.91E-05	0.36837	PEX3
36968 at384	U30255	0.001377	4.67E-05	0.000826	0.325906	PGD
35378 at385	M61906	0.000344	4.67E-05	0.000611	-0.2492	PIK3R1
33181 at386	M60483	0.000344	4.67E-05	3.17E-05	-0.32565	PPP2CA
1241 at387	U14603	7.44E-05	4.67E-05	4.46E-05	0.427268	PTP4A2
40869 at388	AF069517	0.001377	4.67E-05	0.000441	0.330897	RBM6
570 at389	M83221	0.000344	4.67E-05	1.58E-05	-0.26782	RELB
38290 at390	AF037195	0.00482	4.67E-05	8.27E-05	0.959619	RGS14
1127 at391	L07597	0.00482	4.67E-05	0.000169	0.277243	RPS6KA1
1866 g at392	X15217	7.44E-05	4.67E-05	3.77E-07	-0.2371	SKIL
36979 at393	M20681	0.001377	4.67E-05	1.92E-05	-0.99917	SLC2A3
36542 at394	AF030409	7.44E-05	4.67E-05	7.66E-06	0.412043	SLC9A6
37410 at395	AJ224358	0.00482	4.67E-05	0.009613	0.14432	SURF5
35634 at396	U49928	0.000344	4.67E-05	6.31E-06	0.352648	TAB1
38805 at397	X89750	7.44E-05	4.67E-05	7.38E-06	-1.51687	TGIF
32831 at398	AA453183	0.001377	4.67E-05	4.48E-05	-0.61646	TIM17
1372 at399	M31165	7.44E-05	4.67E-05	1.38E-06	-0.34617	TNFAIP6
31742 at400	AF064090	0.001377	4.67E-05	4.05E-05	-0.38921	TNFSF14
39430 at401	AF082557	0.001377	4.67E-05	2.23E-06	0.226994	TNKS
38834 at402	D87448	0.00482	4.67E-05	0.000735	0.468196	TOPBP1
33866 at403	X05276	0.00482	4.67E-05	8.97E-05	-0.50457	TPM4

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3325 <del>3</del> at404	D50919	0.00482	4.67E-05	4.02E-05	0.332326	TRIM14
1410 <del>1</del> at405	J03258	0.00482	4.67E-05	8.78E-05	-0.33021	VDR
3238 <del>3</del> at406	AB007973	0.00482	4.67E-05	0.000146	0.271053	
4087 <del>3</del> f at407	AF041081	0.00482	4.67E-05	5.92E-05	0.26539	
3625 <del>1</del> at408	AI889718	7.44E-05	4.67E-05	0.000143	-0.15002	
3704 <del>3</del> at409	AL021154	0.000344	4.67E-05	2.19E-06	-0.82935	
4071 <del>1</del> at410	AL049340	0.000344	4.67E-05	4.87E-05	-0.91769	
3932 <del>4</del> at411	AL050078	0.000344	4.67E-05	1.63E-05	-0.2875	
3744 <del>2</del> at412	AL050378	0.000344	4.67E-05	5.72E-06	0.360577	
3368 <del>3</del> at413	D50525	0.000344	4.67E-05	3.02E-06	0.486698	
3169 <del>7</del> s at414	J04755	7.44E-05	4.67E-05	6.75E-05	-0.37296	
4084 <del>2</del> at415	M60784	7.44E-05	4.67E-05	1.24E-06	0.559903	
3610 <del>1</del> s at416	M63978	0.000344	4.67E-05	1.77E-06	-0.44762	
3809 <del>3</del> at417	U90909	0.00482	4.67E-05	3.74E-05	-0.64272	
3152 <del>5</del> f at418	X63547	0.001377	4.67E-05	0.000303	0.505712	
3260 <del>5</del> at419	AA135683	0.000344	5.23E-05	0.000289	-0.69258	BASP1
3620 <del>1</del> at420	S78771	0.000344	5.23E-05	2.55E-06	-0.31389	BRD2
3941 <del>1</del> at421	AL080156	0.000344	5.23E-05	3.52E-05	-0.94419	DKFZP434J214
1616 <del>1</del> at422	D14838	0.000344	5.23E-05	7.34E-06	-0.50648	FGF9
3578 <del>5</del> at423	W28281	0.000344	5.23E-05	8.96E-06	-1.09149	GABARAPL1
4138 <del>5</del> i at424	AB002344	7.44E-05	5.23E-05	8.48E-07	-1.00068	KIAA0346
3767 <del>3</del> at425	U23070	0.000344	5.23E-05	3.62E-05	-0.12321	NMA
1069 <del>1</del> at426	U04636	0.000344	5.23E-05	2.81E-06	-1.85123	PTGS2
471 <del>1</del> f at427	U47634	0.000344	5.23E-05	0.002405	-0.21686	TUBB4
1464 <del>1</del> at428	S73149	0.000344	5.23E-05	0.003714	-0.15741	
3619 <del>1</del> at429	M63256	0.000344	5.92E-05	6.54E-07	0.454561	CDR2
3800 <del>3</del> s at430	U94905	0.000344	5.92E-05	2.08E-05	0.388608	DGKZ
4084 <del>3</del> at431	AF012023	7.44E-05	5.92E-05	1.02E-06	0.50623	ICAP-1A
1479 <del>1</del> g at432	L10717	0.000344	5.92E-05	0.000158	0.345558	ITK
3814 <del>1</del> at433	D29642	0.000344	5.92E-05	8.30E-06	0.327019	KIAA0053
3627 <del>1</del> at434	AB011128	0.000344	5.92E-05	0.000584	0.151161	KIAA0556
3977 <del>7</del> at435	AF075587	0.000344	5.92E-05	7.55E-06	0.4405	KIAA0916
138 <del>1</del> at436	U66464	0.000344	5.92E-05	2.93E-05	0.255675	MAP4K1
3612 <del>7</del> g at437	U18919	0.000344	5.92E-05	0.000573	0.277847	NBP
1980 <del>1</del> s at438	X58965	0.000344	5.92E-05	7.34E-05	0.231912	NME2
4089 <del>5</del> at439	X13403	7.44E-05	5.92E-05	4.21E-07	0.146032	POU2F1
3207 <del>5</del> at440	D89859	0.000344	5.92E-05	1.56E-05	0.375402	ZFP161
3681 <del>3</del> at441	AF052100	0.000344	5.92E-05	1.37E-05	0.290021	
3969 <del>3</del> at442	N53547	7.44E-05	7.24E-05	1.80E-07	0.296678	MGC5508
3390 <del>1</del> at443	L35013	0.000344	7.24E-05	0.000112	-0.17331	SF3B4
4101 <del>1</del> at444	Y17829	7.44E-05	7.24E-05	5.49E-06	-0.6508	SYN47
4055 <del>2</del> s at445	AL049987	7.44E-05	7.24E-05	2.39E-05	0.193082	
3790 <del>4</del> s at446	X66436	0.000344	7.24E-05	1.88E-06	-0.26662	
3940 <del>3</del> at447	Z80345	7.44E-05	9.64E-05	7.31E-06	0.412137	ACADS
2002 <del>1</del> s at448	U27467	7.44E-05	9.64E-05	5.65E-06	-0.56637	BCL2A1
3448 <del>4</del> at449	AI961669	7.44E-05	9.64E-05	0.000107	-0.1656	BIG2

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3729h at450	X61123	7.44E-05	9.64E-05	4.17E-07	-1.15256	BTG1
3297b g at451	U49187	7.44E-05	9.64E-05	3.53E-06	0.511392	C6orf32
3665b at452	D13639	7.44E-05	9.64E-05	8.56E-06	-0.64255	CCND2
3484b at453	AL035398	7.44E-05	9.64E-05	0.000153	0.353395	CGI-51
529 at454	U15932	7.44E-05	9.64E-05	0.00031	-1.26603	DUSP5
3859b s at455	AD001530	7.44E-05	9.64E-05	3.06E-05	-0.37019	DXS9928E
3776b at456	Y07909	7.44E-05	9.64E-05	0.000161	-0.23489	EMP1
3822b at457	W27152	7.44E-05	9.64E-05	0.000502	0.186359	FLJ10569
3970h s at458	L17131	7.44E-05	9.64E-05	1.48E-05	-0.24039	HMGIIY
3829b at459	X04430	7.44E-05	9.64E-05	4.15E-05	-0.21816	IL6
4161h at460	AB014608	7.44E-05	9.64E-05	4.59E-06	0.41494	KIAA0708
4006b r at461	AF061258	7.44E-05	9.64E-05	1.58E-06	0.622201	LIM
3583b at462	U90919	7.44E-05	9.64E-05	7.23E-06	-0.50014	LOC57862
4039b at463	J05037	7.44E-05	9.64E-05	0.000185	-0.19243	SDS
4063b at464	X70944	7.44E-05	9.64E-05	2.08E-05	-0.72892	SFPQ
3216b at465	L41887	7.44E-05	9.64E-05	6.74E-06	-0.52203	SFRS7
3264b at466	X59871	7.44E-05	9.64E-05	1.91E-05	0.376648	TCF7
3880b at467	AI742846	7.44E-05	9.64E-05	0.000374	-0.48069	VAPA
1743 s at468	HG2007- HT2056	7.44E-05	9.64E-05	4.01E-06	-0.41408	
3214b at469	X58141	7.44E-05	9.64E-05	1.75E-06	0.384254	
3497b at470	AB018323	7.44E-05	0.000106	2.41E-05	0.432301	GASC1
3391b at471	AB023192	7.44E-05	0.000106	0.000138	0.196185	I-1
4137b at472	AB020638	7.44E-05	0.000106	5.26E-05	0.233629	KIAA0831
4039b at473	U49395	7.44E-05	0.000106	0.001916	0.169175	P2RX5
3693b at474	M23379	7.44E-05	0.000106	3.22E-05	0.42571	RASA1
3221b at475	AF034176	7.44E-05	0.000106	0.000333	0.332105	
3467b f at476	AJ012755	7.44E-05	0.000106	0.000296	0.26445	
3870h at477	AB007934	7.44E-05	0.000119	6.08E-06	0.345799	ACF7
3702b at478	M80899	7.44E-05	0.000119	2.48E-05	0.419409	AHNAK
3465b at479	AB014529	7.44E-05	0.000119	1.84E-05	0.43403	AKAP11
3657b at480	U37547	7.44E-05	0.000119	6.74E-06	-0.71736	BIRC2
3663h at481	U72649	7.44E-05	0.000119	0.000207	-0.30079	BTG2
3433b at482	D49738	7.44E-05	0.000119	0.000136	0.292742	CKAP1
3745b at483	AJ006267	7.44E-05	0.000119	7.19E-06	0.427023	CLPX
3440h at484	W28167	7.44E-05	0.000119	1.16E-05	0.214921	COPS7A
1243 at485	U18300	7.44E-05	0.000119	2.43E-06	0.183171	DDB2
3568b at486	AI133727	7.44E-05	0.000119	1.43E-06	0.181464	FLB6421
3664b at487	AA526812	7.44E-05	0.000119	0.000106	0.259476	FLJ10326
318 at488	D64142	7.44E-05	0.000119	1.66E-05	0.528036	HIFX
3891b at489	U60319	7.44E-05	0.000119	0.001064	0.194324	HFE
3537b r at490	M17017	7.44E-05	0.000119	1.43E-06	-1.74073	IL8
3433b at491	D32053	7.44E-05	0.000119	0.003279	0.222661	KARS
3537h at492	AB007914	7.44E-05	0.000119	7.13E-05	0.302838	KIAA0445
3597h at493	U10485	7.44E-05	0.000119	7.40E-06	0.270352	LRMP
198 b at494	U29656	7.44E-05	0.000119	4.31E-06	0.471876	NME3

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3375 <del>b</del> at495	AB014604	7.44E-05	0.000119	1.72E-05	0.425787	OSBPL3
835 <del>b</del> at496	U41745	7.44E-05	0.000119	0.00204	0.230274	PDAP1
858 <del>b</del> at497	S90469	7.44E-05	0.000119	5.56E-06	-0.2636	POR
875 <del>b</del> at498	M26683	7.44E-05	0.000119	3.70E-06	-0.16179	SCYA2
3737 <del>b</del> at499	X81789	7.44E-05	0.000119	2.23E-05	0.143079	SF3A3
4112 <del>b</del> at500	L14595	7.44E-05	0.000119	3.55E-05	-0.1953	SLC1A4
3834 <del>b</del> at501	AL079286	7.44E-05	0.000119	0.000245	0.165851	STAU2
3734 <del>b</del> s at502	AA845349	7.44E-05	0.000119	7.78E-07	0.457176	TRIP7
4041 <del>b</del> at503	X59303	7.44E-05	0.000119	0.000124	0.224891	VAR52
4136 <del>b</del> at504	AB023219	7.44E-05	0.000119	1.41E-05	0.316475	
3843 <del>b</del> at505	M58603	7.44E-05	0.000129	9.08E-06	-0.56835	NFKB1
3274 <del>b</del> at506	X77723	7.44E-05	0.000129	0.006788	-0.24317	RAB5EP
4138 <del>b</del> at507	AF117829	7.44E-05	0.000129	2.61E-06	-0.57516	RIPK2
3435 <del>b</del> g at508	U52960	7.44E-05	0.000129	0.001042	-0.24648	SURB7
3825 <del>b</del> at509	U84011	0.00482	0.000149	0.000134	0.286331	AGL
3262 <del>b</del> f at510	U90552	0.000344	0.000149	0.000182	0.288509	BTN3A1
4073 <del>b</del> at511	M16336	0.00482	0.000149	0.000224	0.218007	CD2
2031 <del>b</del> s at512	U03106	0.000344	0.000149	0.000252	-0.87784	CDKN1A
3866 <del>b</del> at513	AB009285	0.001377	0.000149	0.000137	0.235726	CFDPI
3468 <del>b</del> at514	U63289	0.001377	0.000149	0.001722	-0.43517	CUGBP1
357 <del>b</del> at515	AF000430	0.00482	0.000149	0.000694	-0.19887	DNM1L
1292 <del>b</del> at516	L11329	0.001377	0.000149	0.000142	-0.56584	DUSP2
3828 <del>b</del> at517	AB007619	0.00482	0.000149	0.002073	0.198391	EBAG9
3731 <del>b</del> at518	X81625	0.00482	0.000149	6.92E-05	-0.80689	ETF1
3831 <del>b</del> at519	AL050128	0.000344	0.000149	1.81E-05	0.459416	FAM8A1
3666 <del>b</del> at520	L49169	0.001377	0.000149	8.18E-05	-2.09549	FOSB
3790 <del>b</del> at521	L25665	0.000344	0.000149	3.34E-06	-0.4513	GNL1
3259 <del>b</del> at522	AI494623	0.00482	0.000149	0.000304	0.187206	HCDI
4057 <del>b</del> f at523	D89678	0.001377	0.000149	3.03E-05	0.197298	HNRPDL
1635 <del>b</del> at524	U07563	0.000344	0.000149	1.02E-05	-0.23627	HSABLGR3
4091 <del>b</del> at525	W28589	0.00482	0.000149	0.000129	0.170457	HSPD1
4125 <del>b</del> at526	N29665	0.000344	0.000149	3.34E-05	0.593294	KIAA0618
4144 <del>b</del> at527	AB023207	0.000344	0.000149	8.64E-06	-0.4056	KIAA0990
4171 <del>b</del> at528	AL079277	0.00482	0.000149	0.000161	0.200656	LOC54103
3477 <del>b</del> at529	Z14138	0.001377	0.000149	0.000197	-0.85008	MAP3K8
3596 <del>b</del> at530	N23137	0.001377	0.000149	4.12E-06	0.244083	MPHOSPH9
3273 <del>b</del> at531	AF050640	0.001377	0.000149	6.03E-05	0.324021	NDUFS2
3973 <del>b</del> at532	AF069987	0.001377	0.000149	4.44E-05	0.203382	NIT1
4165 <del>b</del> at533	AF043325	0.000344	0.000149	1.06E-05	0.328186	NMT2
1102 <del>b</del> s at534	M10901	0.001377	0.000149	1.91E-05	-0.58982	NR3C1
3663 <del>b</del> at535	M12267	0.000344	0.000149	4.07E-06	-0.3279	OAT
3852 <del>b</del> at536	U02882	0.00482	0.000149	0.000223	-0.99878	PDE4D
3499 <del>b</del> at537	AF059531	0.000344	0.000149	6.73E-06	0.546441	PRMT3
3925 <del>b</del> s at538	M29893	0.001377	0.000149	9.96E-05	-0.15688	RALA
3345 <del>b</del> at539	AB029028	0.001377	0.000149	9.11E-06	0.482258	RAP140
4039 <del>b</del> at540	AB007448	0.00482	0.000149	0.000777	-0.319	SLC22A4

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3789 <del>5</del> at541	D87969	0.00482	0.000149	0.001578	0.401991	SLC35A1
4081 <del>0</del> at542	U66615	0.00482	0.000149	0.000196	0.235993	SMARCC1
4165 <del>9</del> at543	U46691	0.00482	0.000149	1.48E-05	-0.85179	SUPT6H
4084 <del>1</del> at544	AF049910	0.00482	0.000149	0.000373	-0.32787	TACC1
115 <del>1</del> at545	X14787	0.001377	0.000149	2.88E-05	-0.19161	THBS1
4014 <del>5</del> at546	AI375913	0.00482	0.000149	0.000905	-0.12102	TOP2A
3367 <del>9</del> f at547	X02344	0.001377	0.000149	0.00414	-0.20405	TUBB2
3766 <del>7</del> at548	AF104421	0.000344	0.000149	6.50E-06	0.349373	UROD
1388 <del>8</del> g at549	J03258	0.000344	0.000149	1.21E-06	-0.58295	VDR
4056 <del>9</del> at550	M58297	0.000344	0.000149	1.57E-05	0.185829	ZNF42
3321 <del>5</del> g at551	Y11681	0.000344	0.000149	1.92E-05	0.234481	
4142 <del>8</del> at552	AF104942	0.001377	0.00019	4.83E-05	0.464438	ABCC5
3214 <del>6</del> s at553	L07261	0.000344	0.00019	0.003564	0.29763	ADD1
287 <del>1</del> at554	L19871	0.001377	0.00019	0.000105	-0.19867	ATF3
3766 <del>1</del> at555	J04027	0.000344	0.00019	0.000133	-0.42466	ATP2B1
4108 <del>9</del> at556	M83363	0.001377	0.00019	0.004471	0.177565	ATP2B4
3184 <del>2</del> at557	AF038195	0.000344	0.00019	0.000134	0.281425	BCS1L
3621 <del>0</del> g at558	S78771	0.001377	0.00019	0.000145	-0.24109	BRD2
650 <del>1</del> at559	L07044	0.001377	0.00019	0.000284	0.186013	CAMK2G
1116 <del>1</del> at560	M28170	0.000344	0.00019	2.96E-05	0.356602	CD19
3522 <del>8</del> at561	Y08682	0.000344	0.00019	0.000118	0.17398	CPT1B
3750 <del>9</del> at562	AF046059	0.001377	0.00019	0.000665	0.204072	CREME9
649 <del>1</del> at563	L06797	0.001377	0.00019	0.000455	-0.93505	CXCR4
631 <del>1</del> at564	L39874	0.000344	0.00019	0.000354	0.353702	DCTD
3183 <del>9</del> at565	AC004475	0.000344	0.00019	2.86E-05	0.25205	DKFZP434E2216
3826 <del>5</del> at566	AI538172	0.001377	0.00019	0.000621	0.243057	DKFZp761B2423
3736 <del>1</del> at567	AF010187	0.000344	0.00019	1.00E-05	0.361895	FIBP
3319 <del>2</del> g at568	AW051579	0.000344	0.00019	0.000258	0.390285	FLJ10512
4076 <del>4</del> at569	M22632	0.001377	0.00019	1.34E-05	0.157239	GOT2
413 <del>1</del> at570	X59372	0.001377	0.00019	0.000528	-0.12959	HOXD9
4108 <del>8</del> at571	X12433	0.000344	0.00019	1.07E-05	-0.39946	HS1-2
3231 <del>5</del> s at572	X15183	0.000344	0.00019	0.000645	-0.22973	HSPCA
3935 <del>8</del> at573	AI912041	0.001377	0.00019	5.21E-05	-0.38517	HSPE1
3866 <del>1</del> at574	X75315	0.000344	0.00019	0.010841	-0.64335	HSRNASEB
253 <del>1</del> at575	L42324	0.000344	0.00019	0.000262	-0.31758	HUMFRCG
3233 <del>2</del> at576	X69433	0.001377	0.00019	0.002925	0.209735	IDH2
3670 <del>9</del> at577	Y00093	0.000344	0.00019	2.60E-05	-0.39318	ITGAX
3908 <del>0</del> at578	M88458	0.001377	0.00019	0.002031	-0.15998	KDEL2
3654 <del>5</del> s at579	AB011114	0.000344	0.00019	3.13E-05	0.278271	KIAA0542
3891 <del>5</del> at580	AB011135	0.000344	0.00019	0.000149	0.247752	KIAA0563
4067 <del>2</del> at581	U57721	0.001377	0.00019	3.47E-05	-0.23188	KYNU
3944 <del>1</del> at582	Y11395	0.001377	0.00019	8.58E-05	0.34059	LANCL1
4159 <del>0</del> at583	AI652660	0.000344	0.00019	2.28E-05	0.385107	LOC51112
3235 <del>0</del> at584	AB026118	0.001377	0.00019	4.47E-06	-0.24886	MALT1
4046 <del>9</del> at585	AB011144	0.000344	0.00019	9.36E-05	0.26851	MCM3AP
4169 <del>5</del> at586	AI620381	0.000344	0.00019	8.06E-06	0.29605	MGC3077



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3865 <del>5</del> at587	AI525633	0.000344	0.00019	2.44E-05	0.170916	MGC5576
4007 <del>4</del> at588	X16396	0.000344	0.00019	3.27E-06	-0.6151	MTHFD2
3772 <del>4</del> at589	V00568	0.000344	0.00019	0.000769	0.549224	MYC
3189 <del>5</del> at590	AL050281	0.000344	0.00019	2.85E-06	0.30517	NAG
4068 <del>5</del> at591	AI985272	0.000344	0.00019	0.000474	-0.2571	NMB
3179 <del>4</del> at592	D38524	0.000344	0.00019	0.001313	0.228851	NT5B
3449 <del>1</del> at593	AJ225089	0.000344	0.00019	0.000531	-0.2589	OASL
3641 <del>3</del> at594	Z82200	0.000344	0.00019	0.000136	-0.28579	P2Y10
4079 <del>1</del> at595	X63564	0.001377	0.00019	1.70E-05	-0.28202	POLR2A
3215 <del>7</del> at596	S57501	0.001377	0.00019	0.002179	0.267744	PPP1CA
1217 <del>1</del> g at597	X07109	0.000344	0.00019	0.000694	0.167774	PRKCB1
1074 <del>1</del> at598	M28209	0.000344	0.00019	0.000392	-0.52456	RAB1
1055 <del>1</del> g at599	M87339	0.000344	0.00019	3.41E-05	0.248151	RFC4
3568 <del>5</del> at600	Z14000	0.000344	0.00019	3.91E-06	-0.33734	RING1
4087 <del>5</del> s at601	X06815	0.000344	0.00019	3.50E-05	0.293968	SNRP70
3775 <del>7</del> at602	L23959	0.000344	0.00019	1.82E-05	-0.36834	TFDP1
3285 <del>5</del> at603	AB018262	0.000344	0.00019	0.000241	0.319056	TOMM70A
3279 <del>3</del> at604	X00437	0.001377	0.00019	0.00022	0.248344	TRB@
3521 <del>4</del> at605	AF061016	0.000344	0.00019	0.000264	0.349913	UGDH
3833 <del>7</del> at606	U62392	0.000344	0.00019	2.74E-05	-0.65983	ZNF193
3454 <del>4</del> at607	X78925	0.001377	0.00019	0.001253	-0.28003	ZNF267
3993 <del>2</del> at608	AI655015	0.001377	0.00019	0.00444	0.74681	
3267 <del>2</del> at609	AL049387	0.001377	0.00019	5.12E-06	0.379296	
4121 <del>2</del> at610	AL050376	0.000344	0.00019	0.00026	0.410405	
3443 <del>5</del> at611	AB008775	0.000344	0.000304	1.88E-06	-0.80745	AQP9
4017 <del>5</del> at612	AI141670	0.000344	0.000304	1.60E-06	-0.2494	CLCN2
3571 <del>5</del> at613	AL080071	0.000344	0.000304	3.12E-06	0.237367	DKFZP564M082
3516 <del>3</del> at614	AB028964	0.000344	0.000304	5.07E-05	0.351352	KIAA1041
3324 <del>9</del> at615	M16801	0.001377	0.000304	0.000458	0.412733	NR3C2
3913 <del>1</del> at616	N36842	0.001377	0.000304	0.000577	0.172944	UPF3A
3341 <del>3</del> at617	AL096752	0.000344	0.000304	0.000323	-0.20419	
3874 <del>3</del> at618	U76421	0.000344	0.000402	0.000278	0.226301	ADARB1
4074 <del>5</del> at619	L13939	0.001377	0.000402	0.000215	0.180874	AP1B1
3934 <del>7</del> at620	X97074	0.001377	0.000402	0.001924	0.298218	AP2S1
818 <del>1</del> s at621	U72936	0.000344	0.000402	1.03E-05	0.356824	ATRX
3694 <del>5</del> at622	X94910	0.000344	0.000402	0.000204	0.249294	C12orf8
4040 <del>4</del> s at623	U18291	0.000344	0.000402	2.45E-05	0.594377	CDC16
1273 <del>1</del> r at624	L22005	0.001377	0.000402	0.000111	-0.15257	CDC34
3283 <del>3</del> at625	M59287	0.00482	0.000402	0.000276	-0.72279	CLK1
3531 <del>2</del> at626	U25435	0.000344	0.000402	0.000648	0.264876	CTCF
630 <del>1</del> at627	L39874	0.000344	0.000402	2.41E-05	0.211923	DCTD
3464 <del>7</del> at628	X52104	0.000344	0.000402	0.000159	0.317963	DDX5
3377 <del>5</del> at629	AL050062	0.000344	0.000402	0.000377	0.36401	DKFZP566K023
3579 <del>2</del> at630	AL080081	0.00482	0.000402	0.000103	-0.60871	DNAJB9
4037 <del>5</del> at631	X63741	0.001377	0.000402	0.000175	-0.59207	EGR3
777 <del>1</del> at632	D13988	0.001377	0.000402	0.000371	0.14676	GDI2

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1368	at633	M27492	0.000344	0.000402	2.01E-06	-0.32619	IL1R1
3341	g at634	S66213	0.000344	0.000402	9.56E-05	0.247863	ITGA6
3431	at635	AJ005896	0.000344	0.000402	5.38E-05	0.210462	JM4
3547	at636	Y10745	0.00482	0.000402	6.39E-05	-0.30524	KCNJ15
3483	at637	AB002374	0.00482	0.000402	0.000916	0.20284	KIAA0376
4169	at638	AB007874	0.001377	0.000402	0.000181	-0.21662	KIAA0414
3322	at639	AB011133	0.00482	0.000402	0.000521	0.302843	KIAA0561
3933	at640	AB018335	0.00482	0.000402	9.03E-05	0.234274	KIAA0792
3737	i at641	M13452	0.00482	0.000402	0.00148	-0.28339	LMNA
3257	at642	X68836	0.00482	0.000402	2.15E-05	-0.57967	MAT2A
3757	at643	U79256	0.000344	0.000402	2.24E-05	0.328028	MGC14258
3718	at644	X76538	0.001377	0.000402	5.62E-05	0.408464	MPV17
3653	at645	AB011093	0.000344	0.000402	0.000101	0.612928	P114-RHO-GEF
1224	at646	X66363	0.001377	0.000402	6.80E-05	-0.24041	PCTK1
4146	at647	U13695	0.00482	0.000402	2.31E-05	0.31531	PMS1
3535	at648	D87078	0.000344	0.000402	3.88E-05	0.497225	PUM2
109	at649	Z97074	0.001377	0.000402	3.97E-05	0.296662	RAB9P40
3998	at650	X90530	0.000344	0.000402	3.52E-05	0.254197	RAGB
3691	at651	U75679	0.001377	0.000402	0.000139	-0.29594	SLBP
3876	at652	AF007142	0.000344	0.000402	3.15E-06	0.678734	
3671	at653	AL021977	0.00482	0.000402	8.82E-05	-0.82538	
3863	at654	AL080192	0.001377	0.000402	4.26E-05	0.201319	
956	at655	HG1980-HT2023	0.00482	0.000402	0.003775	-0.48359	
3400	at656	U47924	0.001377	0.000402	0.000134	0.52195	
1933	g at657	U83661	0.000344	0.000444	9.97E-06	0.270218	ABCC5
3970	at658	AI961929	0.000344	0.000444	1.88E-05	0.461528	ARHGAP1
3964	at659	X78817	0.000344	0.000444	2.82E-05	0.281835	ARHGAP4
3440	at660	AL080164	0.000344	0.000444	0.000218	0.268161	DKFZP564C1940
3721	at661	X90392	0.000344	0.000444	0.000208	0.150242	DNASE1L1
4085	at662	AI561196	0.000344	0.000444	0.000156	0.302434	FLJ11806
3710	at663	AJ008112	0.000344	0.000444	0.000246	-0.32126	FMNL
3801	at664	M94630	0.000344	0.000444	0.000244	0.274532	HNRPD
3572	at665	M38180	0.000344	0.000444	0.003037	-0.15741	HSD3B1
3183	at666	U79274	0.000344	0.000444	9.67E-05	0.285563	HSU79274
4022	s at667	AB014585	0.000344	0.000444	6.48E-05	0.460196	KIAA0685
3468	at668	AB029001	0.000344	0.000444	0.000183	-0.33324	KIAA1078
3273	at669	AA045160	0.000344	0.000444	4.62E-05	0.179556	MRPS14
4081	at670	M96824	0.000344	0.000444	2.18E-05	0.139326	NUCB1
381	at671	Y10055	0.000344	0.000444	9.91E-06	0.176067	PIK3CD
3802	s at672	Z54367	0.000344	0.000444	1.30E-05	-0.39738	PLEC1
3479	at673	AF014402	0.000344	0.000444	7.63E-05	0.147061	PPAP2A
4051	at674	M30773	0.000344	0.000444	0.001161	0.41229	PPP3R1
878	at675	M29386	0.000344	0.000444	6.26E-05	-0.23554	PRL
1852	at676	X02910	0.000344	0.000444	0.001378	-0.17579	TNF
3491	s at677	S76792	0.000344	0.000444	0.000211	-0.16737	TNFRSF4

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3768 <del>5</del> s at678	Y09008	0.000344	0.000444	0.000352	0.168444	UNG
4014 <del>7</del> at679	U18009	0.000344	0.000444	0.002896	0.204706	VATI
1307 <del>1</del> at680	D14533	0.000344	0.000444	0.000837	0.246085	XPA
3656 <del>4</del> at681	W27419	0.000344	0.000444	2.83E-05	-0.44121	
3500 <del>1</del> at682	Z85986	0.000344	0.000444	0.000407	-0.2149	
3660 <del>7</del> at683	Z99716	0.000344	0.000444	5.14E-05	0.324642	
3536 <del>4</del> at684	U50939	0.001377	0.000525	1.19E-05	0.235552	APPBP1
3655 <del>4</del> at685	Y15521	0.00482	0.000525	0.000492	-0.28889	ASMTL
3794 <del>3</del> at686	J05682	0.00482	0.000525	0.000291	-0.33004	ATP6C
3794 <del>7</del> at687	D26362	0.00482	0.000525	0.000707	0.247252	BRD3
3952 <del>5</del> at688	AL120687	0.001377	0.000525	1.21E-05	-0.55731	CSH1
4064 <del>5</del> at689	U20350	0.00482	0.000525	0.010386	0.383475	CX3CR1
3797 <del>5</del> at690	X04011	0.00482	0.000525	0.000154	0.348439	CYBB
3657 <del>3</del> at691	U78524	0.001377	0.000525	6.56E-05	-0.36872	DDXBP1
3918 <del>2</del> at692	U87947	0.001377	0.000525	5.05E-05	-0.29673	EMP3
3987 <del>5</del> at693	AL035252	0.00482	0.000525	0.003735	0.074075	ENTPD6
3730 <del>7</del> at694	X04828	0.00482	0.000525	0.0015	0.256297	GNAI2
3232 <del>1</del> at695	X56841	0.001377	0.000525	4.37E-05	0.338907	HLA-E
1185 <del>1</del> at696	D49410	0.00482	0.000525	0.00016	-0.21753	HUMIL3RA12
4081 <del>5</del> g at697	L40586	0.00482	0.000525	3.02E-05	-0.20891	IDS
3760 <del>3</del> at698	X52015	0.00482	0.000525	0.00032	-0.54051	IL1RN
3765 <del>1</del> at699	D31888	0.00482	0.000525	7.50E-06	-0.44687	KIAA0071
3839 <del>4</del> at700	D42047	0.001377	0.000525	3.50E-05	0.226884	KIAA0089
3544 <del>2</del> at701	AB007958	0.00482	0.000525	0.00023	0.259725	KIAA0489
3525 <del>2</del> at702	AB011100	0.00482	0.000525	0.000193	0.418151	KIAA0528
3180 <del>3</del> at703	AB014553	0.00482	0.000525	0.002002	-0.25439	KIAA0653
3730 <del>3</del> at704	AI888084	0.001377	0.000525	3.57E-05	0.391754	KIAA1624
3218 <del>4</del> at705	X61118	0.00482	0.000525	0.001631	0.292879	LMO2
3487 <del>4</del> at706	AJ004832	0.00482	0.000525	0.001715	0.30393	NTE
4166 <del>5</del> at707	AB020631	0.001377	0.000525	0.000212	0.379354	PCF11
3714 <del>3</del> s at708	AB002359	0.00482	0.000525	2.36E-05	0.271468	PFAS
3711 <del>1</del> g at709	AB012229	0.001377	0.000525	0.000168	-0.59579	PFKFB3
3221 <del>0</del> at710	M83088	0.001377	0.000525	3.50E-05	0.439367	PGM1
3739 <del>2</del> at711	X84908	0.001377	0.000525	2.25E-05	0.331887	PHKB
4062 <del>4</del> at712	U48250	0.001377	0.000525	8.51E-05	-0.2234	PRKCBP2
4185 <del>3</del> at713	AB007851	0.000344	0.000525	1.95E-05	0.481768	PRPSAP2
3207 <del>0</del> at714	X97267	0.00482	0.000525	0.000303	0.211707	PTPRCAP
3273 <del>7</del> at715	M64595	0.00482	0.000525	0.004436	0.170959	RAC2
3657 <del>5</del> at716	S59049	0.001377	0.000525	0.000915	-0.61362	RGS1
3471 <del>4</del> at717	AL050267	0.00482	0.000525	0.000204	0.311003	SAMHD1
4145 <del>1</del> s at718	W28498	0.00482	0.000525	1.70E-05	-0.57386	SAR1
4119 <del>9</del> s at719	W27050	0.00482	0.000525	2.37E-05	-0.587	SFPQ
3727 <del>3</del> at720	X92762	0.00482	0.000525	0.000116	0.283179	TAZ
3474 <del>1</del> at721	U18422	0.001377	0.000525	0.000279	-0.14486	TFDP2
950 <del>1</del> at722	D87127	0.001377	0.000525	0.000126	-0.32216	TLOC1
1468 <del>1</del> at723	U12595	0.001377	0.000525	1.07E-05	0.347309	TRAP1

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40065	at724	AF046024	0.00482	0.000525	0.000469	0.405378	UBE1C
32235	at725	AF032456	0.001377	0.000525	5.89E-05	0.269833	UBE2G2
41532	at726	Y09723	0.00482	0.000525	0.000854	-0.23772	ZNF151
33297	at727	AL031778	0.00482	0.000525	0.000239	0.178561	
36212	at728	AL049218	0.00482	0.000525	0.001951	0.238837	
35187	at729	AL080216	0.00482	0.000525	0.000349	0.311531	
32855	at730	L00352	0.00482	0.000525	0.005084	-0.39882	
856	at731	S79267	0.00482	0.000525	0.000908	-0.19945	
31615	i at732	U94902	0.00482	0.000525	0.002556	-0.17833	
33198	at733	AA206524	0.000344	0.000567	0.000172	0.161868	BART1
37347	at734	AA926959	0.000344	0.000567	8.47E-05	0.169915	CKS1
876	at735	M27543	0.000344	0.000567	0.000319	-0.48924	GNAI3
41555	s at736	AF019386	0.000344	0.000567	0.000399	-0.18103	HS3ST1
38545	at737	AB006537	0.000344	0.000567	0.000658	-0.1547	IL1RAP
38145	at738	AJ001306	0.000344	0.000567	5.70E-05	0.338818	INADL
32235	at739	AB011116	0.000344	0.000567	0.000355	0.25593	KIAA0544
33924	at740	AB029014	0.000344	0.000567	0.001352	-0.1261	KIAA1091
34839	at741	AB029027	0.000344	0.000567	0.00209	0.180974	KIAA1104
36690	at742	M10901	0.000344	0.000567	4.00E-05	-0.42455	NR3C1
352	at743	D30036	0.000344	0.000567	5.62E-05	-0.15539	PITPN
40129	at744	U47077	0.000344	0.000567	0.001173	0.30799	PRKDC
33212	at745	AF006751	0.000344	0.000567	3.40E-05	-0.23462	RRBP1
33705	at746	AB006198	0.000344	0.000567	0.001465	0.256734	SART1
40104	at747	D63780	0.000344	0.000567	0.00021	0.374406	STK25
33850	at748	W28892	0.000344	0.000567	8.26E-05	0.803602	SUI1
890	at749	M74524	0.000344	0.000567	0.000421	-0.31531	UBE2A
41790	at750	AL031230	0.000344	0.000567	6.83E-05	0.272378	
37303	at751	AF057160	0.001377	0.000588	0.000279	0.307281	ADPRTL1
39335	at752	M74491	0.001377	0.000588	3.02E-05	0.170825	ARF3
36872	at753	AL120559	0.001377	0.000588	4.80E-05	-0.64478	ARPP-19
40103	at754	D13630	0.001377	0.000588	3.01E-05	-0.42457	BZAP45
40452	at755	U83246	0.001377	0.000588	0.003502	0.133045	CPNE1
31852	at756	AL050390	0.001377	0.000588	0.000139	0.231898	DKFZP564O043
36201	at757	D13315	0.001377	0.000588	0.000203	0.371377	GLO1
2090	i at758	H12458	0.001377	0.000588	5.42E-05	-0.22578	H12458 yj12d03.s1
35733	at759	AI347088	0.001377	0.000588	0.000151	0.321012	HMG17L3
998	at760	X59770	0.001377	0.000588	0.001417	-0.36292	IL1R2
40461	at761	AB007855	0.000344	0.000588	1.02E-05	0.086396	KIAA0395
36213	at762	AB016816	0.001377	0.000588	0.000751	0.146218	MASL1
518	at763	U07132	0.001377	0.000588	0.002035	-0.27336	NR1H2
35835	at764	AB019409	0.001377	0.000588	0.001479	0.154377	PDL-108
36502	at765	AB020641	0.001377	0.000588	0.00342	0.174568	PFTK1
40521	at766	AL050259	0.001377	0.000588	0.001864	0.272972	RAB2L
35235	g at767	AA099265	0.001377	0.000588	0.000614	0.38275	RECK
18561	at768	X75042	0.001377	0.000588	6.85E-05	-0.39572	REL

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3430 <del>1</del> s at769	AL050290	0.001377	0.000588	0.002426	-0.28771	SAT
3939 <del>9</del> at770	AJ006417	0.001377	0.000588	0.000125	-0.18595	TBCD
4144 <del>5</del> at771	X02812	0.001377	0.000588	1.78E-05	-0.16423	TGFB1
3624 <del>3</del> at772	AL050262	0.001377	0.000588	0.0031	0.348226	TLR1
3361 <del>6</del> at773	X16576	0.001377	0.000588	9.49E-05	0.431692	ZNF46
4136 <del>2</del> at774	X91249	0.000344	0.000609	1.04E-05	-0.3925	ABCG1
3431 <del>0</del> at775	Y00486	0.000344	0.000609	0.000297	0.259418	APRT
3277 <del>2</del> s at776	U10473	0.000344	0.000609	0.000103	-0.15424	B4GALT1
4014 <del>1</del> at777	AB014595	0.000344	0.000609	5.19E-05	0.320955	CUL4B
3379 <del>1</del> at778	Y15227	0.000344	0.000609	4.08E-05	0.222481	DLEU1
3216 <del>8</del> s at779	U85267	0.000344	0.000609	0.000131	0.142894	DSCR1
3529 <del>6</del> at780	AB019036	0.000344	0.000609	0.000336	0.177649	GGPS1
824 <del>1</del> at781	U90313	0.000344	0.000609	0.001838	-0.25377	GSTTLp28
1589 <del>1</del> s at782	L42243	0.000344	0.000609	0.000201	0.403838	HUMIFNAM08
3573 <del>1</del> at783	X16983	0.000344	0.000609	0.000317	0.232935	ITGA4
3583 <del>0</del> at784	AB002368	0.000344	0.000609	0.001709	0.215217	KIAA0370
3617 <del>1</del> at785	AI521453	0.000344	0.000609	0.000707	-0.22735	PC4
3214 <del>0</del> at786	Y08110	0.000344	0.000609	9.87E-05	0.260436	SORL1
1858 <del>1</del> at787	D38122	0.000344	0.000609	6.27E-05	-0.61781	TNFSF6
3695 <del>9</del> at788	U49278	0.000344	0.000609	0.000173	0.204424	UBE2V1
3942 <del>9</del> at789	X99050	0.000344	0.000609	7.72E-05	0.289751	UVRAG
3975 <del>6</del> g at790	Z93930	0.000344	0.000609	0.00015	-0.26558	XBPI
3805 <del>3</del> s at791	AF015767	0.000344	0.000659	0.000199	0.578977	BRE
3790 <del>7</del> at792	M34677	0.000344	0.000659	0.000647	0.198622	F8A
1666 <del>1</del> at793	J00210	0.000344	0.000659	0.002453	-0.18828	IFNA1
4134 <del>6</del> at794	AJ007583	0.000344	0.000659	0.00506	-0.12644	LARGE
2059 <del>1</del> s at795	M36881	0.000344	0.000659	0.000302	0.328248	LCK
3617 <del>4</del> at796	X70326	0.000344	0.000659	0.000132	-0.58974	MACMARCKS
3222 <del>6</del> at797	M64571	0.000344	0.000659	0.000158	0.157573	MAP4
3860 <del>5</del> at798	AI345944	0.000344	0.000659	0.000363	0.311507	NDUFB1
1695 <del>1</del> at799	D23662	0.000344	0.000659	0.000171	0.289452	NEDD8
3859 <del>0</del> r at800	M14630	0.000344	0.000659	1.26E-05	-0.1626	PTMA
4176 <del>3</del> g at801	D64015	0.000344	0.000659	0.001012	0.195679	TIAL1
3232 <del>3</del> at802	M63582	0.000344	0.000659	2.66E-05	-0.39175	
3556 <del>4</del> at803	U79300	0.000344	0.000659	0.000196	-0.16218	
4096 <del>0</del> at804	D29805	0.00482	0.000812	0.000289	-0.23044	B4GALT1
1913 <del>1</del> at805	U47414	0.001377	0.000812	0.000137	0.262974	CCNG2
266 <del>1</del> at806	L33930	0.001377	0.000812	5.56E-06	0.343203	CD24
3211 <del>1</del> at807	AL050164	0.00482	0.000812	0.000345	0.307729	CDYL
4008 <del>2</del> at808	D10040	0.001377	0.000812	1.49E-05	-0.45708	FACL2
3718 <del>7</del> at809	M36820	0.00482	0.000812	7.67E-05	-0.49075	GRO2
466 <del>1</del> at810	U77948	0.00482	0.000812	0.000511	0.286776	GTF2I
4148 <del>4</del> r at811	X56681	0.00482	0.000812	0.000503	-0.18359	JUND
3522 <del>4</del> at812	AF070569	0.00482	0.000812	0.000446	-0.6104	MGC14376
3425 <del>3</del> at813	W28205	0.00482	0.000812	0.00017	-0.21741	MKLN1
1719 <del>1</del> at814	U61981	0.001377	0.000812	0.000725	0.203996	MSH3

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39707 at815	AB014547	0.001377	0.000812	7.73E-05	0.217806	MTMR4
39507 at816	AL050366	0.00482	0.000812	0.001126	0.421541	OGT
35714 at817	U89606	0.001377	0.000812	6.13E-05	-0.19512	PDXK
1810 s at818	D10495	0.00482	0.000812	0.000433	0.290156	PRKCD
32783 at819	D42063	0.001377	0.000812	0.000346	-0.52828	RANBP2
41445 f at820	H68340	0.00482	0.000812	0.004081	-0.3419	RNAHP
41544 at821	AF059617	0.001377	0.000812	0.00012	-0.27807	SNK
32165 at822	AB028950	0.00482	0.000812	0.000365	0.313606	TLN1
1729 at823	L41690	0.001377	0.000812	0.000109	0.401776	TRADD
32173 at824	X95384	0.00482	0.000812	0.00053	0.327055	UK114
36000 at825	X98054	0.00482	0.001094	4.71E-05	-0.12615	CREBL1
271 b at826	J05036	0.00482	0.001094	0.00171	0.064463	CTSE
40093 at827	AF001434	0.00482	0.001094	0.000161	-0.26223	EHD1
663 at828	L18960	0.00482	0.001094	3.26E-05	-0.38369	EIF1A
38340 at829	AB014555	0.00482	0.001094	0.001608	-0.18202	KIAA0655
36673 at830	X76057	0.00482	0.001094	0.000352	0.193745	MPI
1986 at831	X74594	0.00482	0.001094	0.000352	0.439326	RBL2
39857 at832	AF044309	0.00482	0.001094	0.000217	-0.2163	STX11
37911 at833	U07158	0.00482	0.001094	0.000122	-0.2301	STX4A
633 b at834	L40386	0.00482	0.001094	7.97E-05	-0.19863	TFDP2
39513 at835	H97470	0.00482	0.001094	0.000624	-0.10587	
38213 at836	U78027	0.00482	0.001094	0.000804	0.340784	
1530 g at837	U50534	0.001377	0.001345	0.00039	0.250627	I3CDNA73
34181 at838	X55330	0.001377	0.001345	9.30E-05	0.493025	AGA
36637 at839	L19605	0.001377	0.001345	0.004442	0.183134	ANXA11
39082 at840	Y00097	0.001377	0.001345	4.42E-05	0.409932	ANXA6
2000 at841	U26455	0.00482	0.001345	0.000705	0.499049	ATM
34783 s at842	AF047473	0.001377	0.001345	5.14E-05	0.226	BUB3
579 at843	M95724	0.00482	0.001345	0.002166	-0.46553	CENPC1
35852 at844	AB014558	0.001377	0.001345	0.004662	-0.44793	CRY2
41670 at845	R38263	0.001377	0.001345	0.00048	-0.12843	DJ347H13.4
36403 s at846	A1434146	0.001377	0.001345	0.000397	0.187485	DKFZp570I0164
1306 at847	D12686	0.00482	0.001345	0.008744	-0.11456	EIF4G1
39542 at848	AF059611	0.00482	0.001345	0.000694	-0.27343	ENC1
40522 at849	X59834	0.001377	0.001345	0.004986	-0.34836	GLUL
319 g at850	D64142	0.001377	0.001345	0.000169	0.293999	H1FX
36372 at851	U51333	0.001377	0.001345	0.000376	0.273402	HK3
235 at852	M59488	0.001377	0.001345	0.001357	-0.13313	HUMS100B3
41165 at853	X58529	0.001377	0.001345	0.000417	1.04789	IGHM
37695 at854	D79983	0.001377	0.001345	2.97E-05	0.387491	KIAA0161
40517 at855	AB002370	0.00482	0.001345	0.00052	0.425557	KIAA0372
33333 at856	AB007863	0.001377	0.001345	0.000128	0.29668	KIAA0403
39580 at857	AB014549	0.001377	0.001345	0.001505	0.42387	KIAA0649
37772 at858	AB020711	0.00482	0.001345	0.002079	0.222346	KIAA0904
34713 at859	AB002357	0.001377	0.001345	0.001045	0.317849	KIF3B
39232 at860	U09284	0.00482	0.001345	0.000792	-0.23635	LIMS1

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3542	at861	D50810	0.001377	0.001345	5.17E-05	-0.1859	LNPEP
4151	at862	U18259	0.001377	0.001345	0.000153	0.229322	MHC2TA
4087	s at863	AF041080	0.00482	0.001345	0.001964	0.367098	MN7
4040	at864	X70991	0.001377	0.001345	0.00203	-0.14032	NAB2
3383	at865	AC002045	0.00482	0.001345	0.00028	0.326033	NP1P
3815	at866	U92538	0.001377	0.001345	0.00149	0.2372	ORC5L
1560	g at867	U24153	0.001377	0.001345	0.00018	-0.36291	PAK2
3623	at868	Z49194	0.001377	0.001345	0.000519	0.215733	POU2AF1
3835	at869	AF016371	0.001377	0.001345	0.001059	0.240562	PPIH
3284	at870	AF020736	0.001377	0.001345	6.26E-05	-0.32893	PSMC4
1760	s at871	D11327	0.001377	0.001345	0.00019	-0.74969	PTPN7
3525	at872	AF098799	0.00482	0.001345	0.001893	-0.3646	RANBP7
1848	at873	M22995	0.001377	0.001345	0.005586	0.270032	RAP1A
3154	at874	L11566	0.001377	0.001345	0.000291	0.17032	RPL18
3443	at875	U71364	0.001377	0.001345	0.000276	-0.24064	SERP1NB9
3466	at876	X07834	0.00482	0.001345	0.000362	-0.21917	SOD2
1634	s at877	X05839	0.001377	0.001345	0.000779	-0.20819	TGFB1
3523	at878	AB000509	0.001377	0.001345	3.63E-05	0.460686	TRAF5
147	at879	U82130	0.001377	0.001345	4.69E-05	-0.36064	TSG101
283	at880	L16842	0.001377	0.001345	0.001533	0.189597	UQCRC1
4010	at881	X51521	0.001377	0.001345	0.000379	-0.62845	VIL2
1235	at882	M86400	0.001377	0.001345	0.000132	-0.30595	YWHAZ
3203	at883	AF041259	0.001377	0.001345	0.001393	0.202001	ZNF217
3490	g at884	AA977136	0.001377	0.001345	0.001953	0.095364	
3623	at885	AI624038	0.001377	0.001345	0.001833	-0.16137	
3564	at886	AL050148	0.00482	0.001345	0.000905	0.266795	
1285	at887	HG2709- HT2805	0.001377	0.001345	0.000134	-0.22645	
1162	g at888	HG3227- HT3404	0.001377	0.001345	4.02E-05	-0.23244	
3437	at889	M28225	0.00482	0.001345	0.001444	-0.95152	
3727	at890	U80017	0.001377	0.001345	0.004917	0.171432	
3629	at891	X55544	0.001377	0.001467	0.001049	-0.12406	ATF1
3835	at892	X52560	0.001377	0.001467	8.17E-05	-0.50375	CEBPB
4136	at893	AA044787	0.001377	0.001467	0.001147	0.289086	CNOT8
4004	at894	AF017790	0.001377	0.001467	6.88E-06	0.382661	HEC
771	s at895	D00749	0.001377	0.001467	0.000131	-0.10539	HUMCD7G3
3193	s at896	AB007890	0.001377	0.001467	0.000838	0.200677	KIAA0430
3637	at897	L35251	0.001377	0.001467	0.000873	0.12909	MFAP3
3274	s at898	AF098638	0.001377	0.001467	0.000684	-0.18761	RAB5EP
3532	at899	AB004857	0.001377	0.001467	0.000471	0.23048	SLC11A2
4177	at900	U53347	0.001377	0.001467	0.001367	-0.13658	SLC1A5
4041	at901	U04847	0.001377	0.001467	0.000403	0.117176	SMARCB1
4044	at902	M92843	0.001377	0.001467	3.30E-05	-1.37866	ZFP36
3400	at903	AF033199	0.001377	0.001467	0.00019	0.237743	ZNF204
3750	at904	AC004893	0.001377	0.001467	0.000617	-0.25759	
3850	at905	AL050151	0.001377	0.001467	8.03E-06	-0.80887	

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3177	at906	U80770	0.001377	0.001467	0.006738	-0.12644	
3166	s at907	W27675	0.00482	0.001614	0.005157	0.468709	CDA02
3523	r at908	AI056696	0.00482	0.001614	0.000665	0.215941	CETN3
3972	at909	AF062536	0.00482	0.001614	0.005001	0.197482	CUL1
3879	at910	D29643	0.00482	0.001614	0.0005	0.157183	DDOST
3597	at911	AA181196	0.00482	0.001614	0.000166	0.119162	FLJ11712
3526	at912	W07033	0.001377	0.001614	0.000136	0.347648	GMFG
3457	at913	Z18859	0.00482	0.001614	0.000684	0.181514	GNAT2
1931	at914	U83660	0.00482	0.001614	0.00114	0.136411	HSU83660
3882	s at915	AA628946	0.00482	0.001614	0.002684	0.337197	KHSRP
3346	at916	D13626	0.00482	0.001614	0.005837	0.254138	KIAA0001
3266	at917	AB002340	0.00482	0.001614	0.002977	0.168464	KIAA0342
3220	at918	AB002353	0.001377	0.001614	0.000119	0.305921	KIAA0355
3647	at919	U32849	0.00482	0.001614	0.000272	0.345048	NMI
1348	s at920	S79219	0.00482	0.001614	0.000119	0.167463	PCCA
1486	at921	L37127	0.00482	0.001614	0.010173	0.103446	POLR2J
3277	at922	M35416	0.00482	0.001614	0.001433	0.33505	RALB
3259	at923	X76061	0.00482	0.001614	0.000273	0.378113	RBL2
4078	at924	AF061741	0.00482	0.001614	0.004586	0.221278	SDR1
3418	at925	D31891	0.001377	0.001614	0.000819	0.161458	SETDB1
3216	at926	W26406	0.00482	0.001614	0.000479	0.300512	SI AH1
802	at927	X84002	0.00482	0.001614	0.000699	0.143479	TAF2J
3430	at928	U81006	0.00482	0.001614	0.003151	0.255479	TM9SF2
1328	at929	U69108	0.00482	0.001614	0.000657	0.208286	TRAF5
3161	at930	S66666	0.00482	0.001614	0.002417	0.119478	
1211	s at931	U84388	0.00482	0.001719	0.000197	-0.18606	CRADD
3911	at932	L08069	0.00482	0.001719	0.001985	-0.31866	DNAJA1
3804	at933	U41514	0.00482	0.001719	9.38E-05	-0.44803	GALNT1
4056	at934	M69013	0.001377	0.001719	6.26E-05	-0.1948	GNA11
3832	s at935	L11706	0.00482	0.001719	0.001422	-0.16675	LIPE
3613	f at936	R92331	0.00482	0.001719	0.000198	-0.24196	MT1E
3754	at937	X64318	0.00482	0.001719	0.006253	-0.37391	NFIL3
4036	at938	X12458	0.00482	0.001719	0.001489	-0.33668	P3
1265	g at939	M25393	0.00482	0.001719	0.000958	-0.23304	PTPN2
595	at940	M59465	0.00482	0.001719	0.0002	-0.96074	TNFAIP3
3432	at941	AF084260	0.00482	0.001719	0.001063	-0.39491	TRIP15
733	at942	HG2149- HT2219	0.00482	0.001719	0.001437	-0.14432	
3915	at943	AB021663	0.00482	0.001963	0.00027	-0.13923	ATF5
3969	at944	AL080209	0.00482	0.001963	0.000337	0.437957	DKFZP586F2423
2056	at945	M34641	0.00482	0.001963	0.002352	-0.14552	FGFR1
3871	at946	AL096714	0.001377	0.001963	0.000469	0.224782	FLJ20113
3824	at947	AB011124	0.001377	0.001963	0.000101	-0.17709	KIAA0552
4049	at948	AB020633	0.001377	0.001963	0.00082	0.308616	KIAA0826
3321	at949	AB029020	0.001377	0.001963	0.00061	0.3824	KIAA1097
3805	at950	X76220	0.001377	0.001963	7.21E-05	0.444366	MAL



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34482	at951	AF040964	0.00482	0.001963	0.001161	-0.54746	MGC4701
41475	at952	U91512	0.001377	0.001963	0.00035	-0.55826	NINJ1
1014	at953	U60325	0.00482	0.001963	0.000288	-0.14386	POLG
362	at954	Z15108	0.001377	0.001963	0.000107	0.176424	PRKCZ
36998	s at955	Y08262	0.001377	0.001963	0.000183	0.377974	SCA2
37428	at956	U30246	0.001377	0.001963	0.000209	-0.25952	SLC12A2
35298	at957	J04137	0.001377	0.001963	0.000641	-0.22175	SSA2
1830	s at958	M38449	0.001377	0.001963	0.0004	-0.29059	TGFB1
36531	r at959	AC005757	0.00482	0.001963	0.000169	0.387439	
919	at960	HG825- HT825	0.001377	0.001963	0.000553	-0.19964	
39590	at961	AF047348	0.001377	0.002207	0.000292	0.202669	APBA2
31877	at962	AF053977	0.001377	0.002207	0.003143	0.134266	CDC23
38345	at963	AF083322	0.001377	0.002207	0.000344	0.272282	CEP1
40905	s at964	AL050369	0.001377	0.002207	0.001224	0.241992	DKFZP566J153
36188	at965	D32257	0.001377	0.002207	0.000238	0.300058	GTF3A
32087	at966	M65217	0.001377	0.002207	0.000232	0.249614	HSF2
31826	at967	AB014574	0.001377	0.002207	0.000606	0.130056	KIAA0674
41170	at968	AB029023	0.001377	0.002207	0.000219	0.219428	KIAA1100
38390	at969	Z34975	0.001377	0.002207	8.88E-05	0.41432	LDLC
40715	at970	D83597	0.001377	0.002207	0.000136	0.249838	LY64
38431	at971	U09759	0.001377	0.002207	0.000842	0.330751	MAPK9
484	at972	U59302	0.001377	0.002207	0.000241	0.309348	NCOA1
36008	at973	AJ005698	0.001377	0.002207	0.004173	0.139618	PARN
37362	at974	X54871	0.001377	0.002207	0.010035	0.119258	RAB5B
35722	at975	AL080198	0.001377	0.002207	0.002866	0.251598	RENT2
39988	at976	M74447	0.001377	0.002207	0.000444	0.093537	TAP2
40854	at977	J04973	0.001377	0.002207	0.011696	0.141705	UQCRC2
38370	at978	U90902	0.001377	0.002207	0.001336	0.246217	
35036	at979	U94333	0.001377	0.002323	0.004818	-0.13898	C1QR
40218	at980	U60808	0.001377	0.002323	0.000374	-0.12217	CDS1
276	at981	L08069	0.001377	0.002323	0.002161	-0.29982	DNAJA1
38706	at982	AA552140	0.001377	0.002323	0.003368	-0.22604	E2F4
587	at983	M31210	0.001377	0.002323	0.000124	-0.33555	EDG1
37018	at984	AI189287	0.001377	0.002323	0.002445	-0.24115	H1F2
33368	at985	W25934	0.001377	0.002323	0.003385	-0.32382	JTV1
34860	g at986	Z98046	0.001377	0.002323	0.000122	-0.33551	MAGED2
37505	at987	L76571	0.001377	0.002323	0.009985	-0.12617	NR0B2
39850	r at988	AF071504	0.001377	0.002323	0.000191	-0.14267	STX11
38795	s at989	X56687	0.001377	0.002323	0.00011	-0.29728	UBTF
38245	i at990	AI097085	0.001377	0.002323	0.000941	-0.16209	
36638	at991	AA114830	0.001377	0.002503	0.000293	0.272601	AKAP10
39094	at992	AI991631	0.001377	0.002503	0.000132	-0.11786	BRD4
36270	at993	U04343	0.001377	0.002503	4.45E-05	-0.25478	CD86
40690	at994	M12824	0.001377	0.002503	0.008271	-0.34597	CD8A
446	at995	U89896	0.001377	0.002503	0.006997	-0.2182	CSNK1G2

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39593	at996	AI432401	0.001377	0.002503	0.006072	0.32631	FGL2
40485	g at997	AA176780	0.001377	0.002503	0.001296	0.14235	HSA249128
31840	at998	M21188	0.001377	0.002503	0.000165	0.251899	IDE
41595	s at999	U43572	0.001377	0.002503	0.000128	0.318327	NAGLU
1539	at1000	X02751	0.001377	0.002503	0.000359	-0.2229	NRAS
34397	at1001	AF069250	0.001377	0.002503	0.00135	0.476217	OA48-18
39175	at1002	D25328	0.001377	0.002503	0.000171	0.125335	PFKP
37024	at1003	AF010312	0.001377	0.002503	0.001216	-0.47628	PIG7
1496	at1004	M34668	0.001377	0.002503	0.000421	0.181315	PTPRA
39601	at1005	AF061836	0.001377	0.002503	0.001026	0.21847	RASSF1
33369	at1006	AI535653	0.001377	0.002503	0.001712	0.34571	SC4MOL
36112	r at1007	X75755	0.001377	0.002503	0.003813	-0.2236	SFRS2
35270	at1008	W16505	0.001377	0.002503	0.001699	0.101763	SNRPD2
37074	at1009	L31529	0.001377	0.002503	0.000325	0.144265	SNTB1
36940	at1010	D86970	0.001377	0.002503	0.000219	0.218777	TIAF1
32254	at1011	AL050223	0.001377	0.002503	0.002632	0.2458	VAMP2
35915	s at1012	AA877215	0.001377	0.002503	0.008439	-0.17878	
38510	at1013	AL049435	0.001377	0.002503	0.000111	0.194323	
40201	at1014	M76180	0.001377	0.002575	0.000698	0.162775	DDC
33195	at1015	M94065	0.001377	0.002575	0.000426	0.156894	DHODH
1161	at1016	J04988	0.001377	0.002575	6.17E-05	-0.22304	HSPCB
36574	at1017	Z68907	0.001377	0.002575	0.000305	0.391111	IDH3G
39723	at1018	J03909	0.001377	0.002575	0.000837	-0.35709	IFI30
34192	at1019	AB011104	0.001377	0.002575	0.000729	0.227798	KIAA0532
41122	at1020	AB011173	0.001377	0.002575	0.000585	0.283714	KIAA0601
40463	at1021	U70322	0.001377	0.002575	0.000177	-0.41259	KPNB2
37542	at1022	D86961	0.001377	0.002575	0.001925	-0.19403	LHFPL2
38955	at1023	AF052111	0.001377	0.002575	0.000738	0.249468	LOC51172
32051	at1024	AJ224875	0.001377	0.002575	0.005091	0.139606	MGC2840
1406	at1025	M21985	0.001377	0.002575	0.001409	-0.102	NR2C1
1594	at1026	J05448	0.001377	0.002575	0.004982	-0.15329	POLR2C
38011	at1027	AB006572	0.001377	0.002575	0.000169	0.213636	RMP
36113	s at1028	AJ011712	0.001377	0.002575	0.011372	0.066711	TNNT1
39134	at1029	AJ006973	0.001377	0.002575	0.000101	-0.31773	TOM1
457	s at1030	U67122	0.001377	0.002575	0.000364	-0.14274	UBL1
40691	at1031	U71598	0.001377	0.002575	0.003508	0.128607	ZNF274
37707	i at1032	M81118	0.001377	0.002575	0.00023	0.333526	
488	at1033	U61166	0.001377	0.002575	0.003055	-0.14488	
31615	r at1034	U94902	0.001377	0.002575	0.000137	-0.23298	
33802	at1035	Z82244	0.001377	0.002575	0.000258	-0.53938	
36585	at1036	M36341	0.001377	0.002788	0.00056	-0.38498	ARF4
37309	at1037	L09159	0.001377	0.002788	0.00112	0.474985	ARHA
459	s at1038	U68485	0.00482	0.002788	0.006797	0.224774	BIN1
41200	at1039	Z22555	0.001377	0.002788	0.005455	-0.16351	CD36L1
38975	at1040	D44497	0.00482	0.002788	0.004453	0.131654	CORO1A
40184	at1041	L37042	0.00482	0.002788	0.000582	-0.33273	CSNK1A1

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31823	at+042	M74099	0.001377	0.002788	0.00014	0.389638	CUTL1
35377	at+043	AL080159	0.001377	0.002788	0.002335	-0.11101	DKFZP434M154
32807	at+044	AF004292	0.001377	0.002788	0.001306	-0.2375	DKFZP566C134
38632	at+045	AF088982	0.001377	0.002788	0.001264	-0.22098	DNAJB5
39983	at+046	U73704	0.001377	0.002788	0.001412	-0.17508	FAP48
1071	at+047	M77810	0.00482	0.002788	0.000209	-0.15854	GATA2
33977	at+048	U67369	0.00482	0.002788	0.00347	0.137095	GFI1
770	at+049	D00632	0.001377	0.002788	0.001138	-0.15517	GPX3
41833	at+050	X99270	0.001377	0.002788	0.00065	0.191612	HSXQ28ORF
37040	at+051	D42041	0.00482	0.002788	0.003705	0.195279	KIAA0088
34359	at+052	AA524058	0.001377	0.002788	0.000288	0.360599	LOC51020
820	at+053	U77604	0.001377	0.002788	0.00233	0.296247	MGST2
674	at+054	J04031	0.00482	0.002788	0.000148	0.290038	MTHFD1
31883	at+055	AF025794	0.001377	0.002788	0.006763	0.107466	MTRR
37355	r at+056	D86326	0.001377	0.002788	0.008217	0.124987	P115
34254	at+057	U14417	0.001377	0.002788	0.000521	-0.13999	RALGDS
1020	s at+058	U85611	0.001377	0.002788	0.000126	-0.3879	SIP2-28
454	at+059	U66617	0.001377	0.002788	0.001462	-0.14653	SMARCD1
32574	at+060	X59960	0.001377	0.002788	0.005127	-0.11069	SMPD1
40262	at+061	AF031166	0.001377	0.002788	0.001219	0.110457	SRP46
1701	at+062	U86136	0.001377	0.002788	0.000542	0.149235	TEP1
37460	at+063	U16296	0.001377	0.002788	0.00138	0.136848	TIAM1
37312	at+064	D50917	0.001377	0.002788	0.000467	0.402091	TRIP-Br2
34224	at+065	AC004770	0.001377	0.002788	0.001042	-0.10615	
31493	s at+066	J03071	0.001377	0.002788	0.0116	0.17732	
33102	at+067	D67031	0.00482	0.004163	0.000204	0.543743	ADD3
458	at+068	U68030	0.00482	0.004163	0.000279	-0.16075	CCR6
40490	at+069	U41387	0.00482	0.004163	8.67E-05	-0.29576	DDX21
34249	at+070	AF084535	0.00482	0.004163	0.002306	0.159095	EPM2A
35983	i at+071	AI417075	0.00482	0.004163	0.000538	0.330385	FLJ14040
38811	at+072	D82348	0.00482	0.004349	0.006063	0.245422	ATIC
38084	at+073	AA648295	0.00482	0.004349	0.002422	0.337484	CBX3
34723	at+074	U79270	0.00482	0.004349	0.001345	0.460807	COX11
39845	at+075	AF071748	0.00482	0.004349	0.002471	0.170315	CTSF
40341	at+076	AL080088	0.00482	0.004349	0.000207	0.165357	DKFZP564K206 2
41234	at+077	AI540318	0.00482	0.004349	0.00055	-0.13789	DNAJB6
38012	at+078	U03272	0.00482	0.004349	0.003893	0.101031	FBN2
40479	at+079	Z97989	0.00482	0.004349	0.001126	-0.41969	FYN
39913	at+080	AF042379	0.00482	0.004349	0.008308	0.176604	GCP2
1017	at+081	U73737	0.00482	0.004349	0.00262	-0.14396	HUMMSH06
38483	s at+082	AF031167	0.00482	0.004349	0.000117	0.201914	IL15
34221	at+083	D83778	0.00482	0.004349	0.000504	-0.2149	KIAA0194
35789	at+084	AB028965	0.00482	0.004349	0.007277	0.125446	KIAA1042
2024	s at+085	M79321	0.00482	0.004349	0.003247	-0.21992	LYN
1130	at+086	L11284	0.00482	0.004349	0.003994	-0.09508	MAP2K1

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3611 <del>8</del>	at1087	AJ000882	0.00482	0.004349	0.00042	0.180413	NCOA1
4082 <del>2</del>	at1088	L41067	0.00482	0.004349	0.000388	0.370635	NFATC3
3614 <del>5</del>	at1089	AF057297	0.00482	0.004349	0.001191	0.521103	OAZ2
3987 <del>3</del>	at1090	X66360	0.00482	0.004349	0.001123	-0.17473	PCTK2
3619 <del>5</del>	at1091	U24183	0.00482	0.004349	0.001156	0.141168	PFKM
903 <del>1</del>	at1092	L42373	0.00482	0.004349	0.006706	0.165885	PPP2R5A
4082 <del>4</del>	at1093	AB018288	0.00482	0.004349	0.003777	0.184227	RANBP16
4121 <del>4</del>	at1094	M58459	0.00482	0.004349	0.008923	-1.04752	RPS4Y
2037 <del>7</del>	s at1095	M60725	0.00482	0.004349	0.001349	-0.10092	RPS6KB1
3240 <del>2</del>	s at1096	Y10931	0.00482	0.004349	0.001246	0.194156	SPK
4096 <del>3</del>	at1097	AB004904	0.00482	0.004349	0.000233	-0.31373	SSI-3
3186 <del>3</del>	at1098	AF060798	0.00482	0.004349	0.000809	0.142845	STK16
3848 <del>0</del>	s at1099	U66867	0.00482	0.004349	0.011318	0.150812	UBE2I
3584 <del>7</del>	at1100	AB028980	0.00482	0.004349	0.001471	0.265042	USP24
3826 <del>2</del>	at1101	AF052107	0.00482	0.004349	0.002884	0.197902	
3555 <del>7</del>	at1102	AL031985	0.00482	0.004349	0.000181	-0.24089	
3544 <del>0</del>	g at1103	D26121	0.00482	0.004349	0.00387	-0.16268	
3403 <del>5</del>	at1104	W28667	0.00482	0.004349	0.004391	0.476395	
3483 <del>3</del>	at1105	AL050157	0.00482	0.004467	0.000289	0.269949	DKFZP586O0120
3836 <del>3</del>	at1106	U31930	0.00482	0.004467	0.000244	0.349997	DUT
4133 <del>3</del>	at1107	AI951946	0.00482	0.004467	8.71E-05	0.401112	HBOA
3565 <del>0</del>	at1108	AB002354	0.00482	0.004467	0.001517	-0.13368	KIAA0356
1376 <del>6</del>	at1109	M36067	0.00482	0.004467	8.15E-05	0.277858	LIG1
691 <del>1</del>	g at1110	J02783	0.00482	0.004467	0.002151	-0.21979	P4HB
1085 <del>5</del>	s at1111	M37238	0.00482	0.004467	0.005333	-0.15474	PLCG2
3823 <del>4</del>	at1112	M99438	0.00482	0.004467	6.20E-05	-0.36844	TLE3
3338 <del>5</del>	at1113	Z97630	0.00482	0.004467	0.002794	0.217849	
3477 <del>7</del>	at1114	D14874	0.00482	0.005608	0.000611	-0.55358	ADM
931 <del>1</del>	at1115	L08177	0.00482	0.005608	0.000434	-0.49252	EBI2
3658 <del>1</del>	at1116	U09510	0.00482	0.005608	5.27E-05	-0.57567	GARS
1126 <del>6</del>	s at1117	L05424	0.00482	0.005608	0.000114	-0.39048	HUMSCG19
3513 <del>5</del>	at1118	X13956	0.00482	0.005608	0.004098	0.187622	MGC10471
3833 <del>5</del>	at1119	U88620	0.00482	0.005608	0.00074	0.345628	OGG1
3978 <del>0</del>	at1120	M29551	0.00482	0.005608	0.000471	0.319301	PPP3CB
3960 <del>4</del>	at1121	AF068836	0.00482	0.005608	0.000323	-0.23628	PSCDBP
3322 <del>2</del>	at1122	U08316	0.00482	0.005608	0.0006	0.205899	RPS6KA3
3282 <del>2</del>	at1123	J02966	0.00482	0.005608	0.000498	-0.11291	SLC25A4
3804 <del>0</del>	at1124	AF107463	0.00482	0.005608	0.002824	-0.36924	SPF30
3312 <del>4</del>	at1125	AB000450	0.00482	0.005608	0.000256	-0.24717	VRK2
4076 <del>0</del>	at1126	AF070590	0.00482	0.005608	0.000834	0.127523	
3223 <del>3</del>	at1127	AF001383	0.00482	0.006065	0.002075	0.16512	BIN1
3259 <del>4</del>	at1128	AF026291	0.00482	0.006065	0.000385	-0.16859	CCT4
3764 <del>2</del>	at1129	D63877	0.00482	0.006065	0.005226	-0.13956	KIAA0157
191 <del>1</del>	at1130	U14383	0.00482	0.006065	0.002623	-0.18669	MUC8
4028 <del>5</del>	at1131	U68140	0.00482	0.006065	0.000677	0.172443	NVL

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1275	at1132	L25441	0.00482	0.006065	0.000613	-0.17207	PGGT1B
4089	at1133	U46751	0.00482	0.006065	0.000578	-0.38675	SQSTM1
1149	at1134	HG4740- HT5187	0.00482	0.006065	0.00867	0.146562	
3886	at1135	W26851	0.00482	0.006065	0.002052	0.312992	
3518	at1136	U78735	0.00482	0.006347	0.000529	-0.09197	ABCA3
3527	at1137	Y12226	0.00482	0.006347	0.000397	-0.21303	APIG1
3723	at1138	D38293	0.00482	0.006347	0.002894	-0.24373	AP3M2
3187	at1139	X14046	0.00482	0.006347	0.001084	0.134786	CD37
4017	at1140	AF026004	0.00482	0.006347	0.008622	-0.07494	CLCN2
3891	at1141	U46023	0.00482	0.006347	0.000273	-0.17969	CXorf6
3960	at1142	AL080178	0.00482	0.006347	0.000683	0.260343	DKFZP434K171
4143	at1143	AL080118	0.00482	0.006347	0.001904	-0.28696	DKFZP564F1123
3482	at1144	AL050197	0.00482	0.006347	0.004294	0.233045	DKFZP586D062 3
1005	at1145	X68277	0.00482	0.006347	0.011411	-0.42385	DUSP1
3804	at1146	X03674	0.00482	0.006347	0.008478	0.174463	G6PD
3530	at1147	Y13286	0.00482	0.006347	0.004068	0.134985	GDI2
1038	s at1148	U19247	0.00482	0.006347	0.000589	-0.29688	HSINFGRA7
3597	at1149	AB023163	0.00482	0.006347	0.002537	0.194491	HYPH
3659	s at1150	L36818	0.00482	0.006347	0.007182	0.204818	INPPL1
3646	at1151	U51127	0.00482	0.006347	0.003952	0.108702	IRF5
3791	at1152	M15395	0.00482	0.006347	0.001863	0.402323	ITGB2
3575	at1153	U51336	0.00482	0.006347	0.008615	0.336527	ITPK1
3922	at1154	AJ000008	0.00482	0.006347	0.000256	-0.14181	PIK3C2G
3315	at1155	AI126004	0.00482	0.006347	0.000954	0.262925	SAS10
3443	at1156	AF051325	0.00482	0.006347	0.000144	-0.43952	SH2D2A
3387	at1157	U79528	0.00482	0.006347	0.002518	0.158101	SR-BP1
3690	at1158	U52426	0.00482	0.006347	9.31E-05	0.411984	STIM1
3811	at1159	AB018339	0.00482	0.006347	0.000751	0.199758	SYNE-1B
3387	at1160	D43642	0.00482	0.006347	0.0005	0.305805	TCFL1
3705	at1161	D29767	0.00482	0.006347	0.003934	-0.09702	TEC
3148	s at1162	M92383	0.00482	0.006347	0.001466	0.219769	TMSB10
3581	at1163	AA192359	0.00482	0.006347	0.00028	0.17619	TRN-SR
3384	at1164	AC004472	0.00482	0.006347	0.002169	-0.15115	
4184	at1165	AF052138	0.00482	0.006347	0.000189	0.441167	
3199	at1166	X15674	0.00482	0.006347	0.007899	-0.10738	
3973	at1167	Z82215	0.00482	0.006347	0.002527	0.153792	
3909	at1168	AF070523	0.00482	0.006634	0.00037	0.437983	JWA
3619	at1169	D13641	0.00482	0.006634	0.000776	0.275308	KIAA0016
3614	at1170	X79204	0.00482	0.006634	0.000182	0.256049	SCA1
4042	at1171	AB015718	0.00482	0.006634	0.001172	0.202412	STK10
3302	at1172	AF059575	0.00482	0.006634	0.000563	-0.18074	
3717	at1173	M74089	0.00482	0.006634	0.00076	0.187888	
3760	at1174	U44111	0.00482	0.006634	0.003845	0.105361	
4097	at1175	AJ243310	0.00482	0.006921	0.000945	-0.97643	C14orf3
3580	at1176	W26854	0.00482	0.006921	0.011098	-0.13774	DKFZP434D156

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148	at1177	U88629	0.00482	0.006921	0.001778	-0.16763	ELL2
3169	at1178	M59830	0.00482	0.006921	0.000221	-1.12882	HSPA1B
4012	at1179	M95929	0.00482	0.006921	0.004606	-0.34536	PMX1
234	at1180	M57399	0.00482	0.006921	0.010231	-0.14331	PTN
3738	at1181	N25117	0.00482	0.006921	0.002068	-0.16335	RPS26
3773	at1182	AL049940	0.00482	0.006921	0.001149	-0.42489	RYBP
3908	at1183	U39318	0.00482	0.006921	0.001097	-0.24533	UBE2D3
369	at1184	Z29331	0.00482	0.006921	0.000193	-0.15851	UBE2H
233	at1185	M55682	0.00482	0.006921	0.010264	-0.10921	
3674	at1186	S58544	0.00482	0.006921	0.005501	-0.11193	
3189	at1187	L13687	0.00482	0.007311	0.002185	0.114008	ARL2
3930	at1188	M88714	0.00482	0.007311	0.002075	0.114833	BDKRB2
3210	at1189	AL050173	0.00482	0.007311	0.001866	0.128954	C21orf25
3528	r at1190	M33680	0.00482	0.007311	0.002612	0.134487	CD81
3793	at1191	X05299	0.00482	0.007311	0.003837	0.171613	CENPB
3702	at1192	X16832	0.00482	0.007311	0.000578	0.177395	CTSH
3789	at1193	U83410	0.00482	0.007311	0.005207	0.219569	CUL2
3687	at1194	AL050018	0.00482	0.007311	0.003938	0.220539	DKFZP564B116
3645	at1195	AL080063	0.00482	0.007311	0.006562	0.186332	DKFZP564I052
3696	at1196	AL050286	0.00482	0.007311	0.000767	0.221397	DKFZP586A011
3733	at1197	X63692	0.00482	0.007311	0.003174	0.172997	DNMT1
3936	at1198	AA522537	0.00482	0.007311	0.002762	0.113812	ELAC2
3594	at1199	AI183417	0.00482	0.007311	0.006167	0.101739	GABPB1
3806	at1200	X62534	0.00482	0.007311	0.000973	0.195089	HMG2
3356	at1201	D50532	0.00482	0.007311	0.001268	0.159735	HML2
3752	at1202	AJ006591	0.00482	0.007311	0.001379	0.1682	HSA6591
3854	at1203	Y00796	0.00482	0.007311	0.000438	0.386166	ITGAL
3423	at1204	AB018301	0.00482	0.007311	0.008701	0.138344	KIAA0758
3703	at1205	AB020694	0.00482	0.007311	0.002526	0.205561	KIAA0887
3208	at1206	AB023198	0.00482	0.007311	0.000409	0.275051	KIAA0981
3421	at1207	AB028958	0.00482	0.007311	0.001533	0.117614	KIAA1035
3736	at1208	U66711	0.00482	0.007311	0.006567	0.260368	LY6E
3597	at1209	L13744	0.00482	0.007311	0.007658	0.19599	MLLT3
3601	at1210	Y09631	0.00482	0.007311	0.000769	0.309898	PIBF1
3562	at1211	L77213	0.00482	0.007311	0.001122	0.247214	PMVK
3912	f at1212	X73478	0.00482	0.007311	0.000681	0.242238	PPP2R4
3924	s at1213	U94319	0.00482	0.007311	0.000688	0.337656	PSIP2
1043	s at1214	U27516	0.00482	0.007311	0.000222	0.194938	RAD52
3796	at1215	W25793	0.00482	0.007311	0.000438	0.258505	RNF3
3233	at1216	X06617	0.00482	0.007311	0.002581	0.116631	RPS11
3464	at1217	Z25749	0.00482	0.007311	0.001419	0.123333	RPS7
3864	at1218	U80760	0.00482	0.007311	0.007371	0.161214	TNRC1
3349	at1219	L27071	0.00482	0.007311	0.000638	0.372837	TXK
3603	at1220	AL031427	0.00482	0.007311	0.000541	0.367004	
3851	at1221	AL109722	0.00482	0.007311	0.00187	0.134304	
3558	at1222	X15675	0.00482	0.007311	0.011165	0.131908	

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3797	l_at1223	AL050089	0.00482	0.007852	0.001906	-0.23061	BAZ1A
1274	s_at1224	L22005	0.00482	0.007852	0.002439	-0.22532	CDC34
3796	b_at1225	AB014679	0.00482	0.007852	0.003059	-0.13664	CHST2
3661	g_at1226	X77956	0.00482	0.007852	0.000689	-0.22743	ID1
3253	h_f_at1227	AI814466	0.00482	0.007852	0.001127	-0.1955	VAMP5
1516	g_at1228	HG4074-HT4344	0.00482	0.007852	0.000964	-0.17461	
3870	b_at1229	AF005050	0.00482	0.008059	0.001761	0.230395	DNPEP
925	at1230	J03909	0.00482	0.008059	0.000125	-0.18353	IFI30
3269	b_at1231	X59841	0.00482	0.008059	0.000226	0.265756	PBX3
3777	h_at1232	AI819942	0.00482	0.009314	0.002286	0.326115	02-Sep
3847	d_i_at1233	D86981	0.00482	0.009314	0.003441	0.319525	APPBP2
3282	b_at1234	Y10805	0.00482	0.009314	0.002583	0.183496	HRMT1L2
478	g_at1235	U51127	0.00482	0.009314	0.00212	0.282678	IRF5
3243	l_at1236	U14970	0.00482	0.009314	0.000561	0.144991	RPS5
3381	b_at1237	AI813532	0.00482	0.009314	0.00037	-0.41933	TNFRSF1B
3995	b_at1238	Y15228	0.00482	0.010363	0.002026	-0.17032	DLEU2
4098	b_at1239	AA926957	0.00482	0.010363	0.000909	-0.22483	FLJ10534
4092	b_at1240	AA554945	0.00482	0.010363	0.001827	-0.14301	FLJ10803
3403	b_at1241	AJ001383	0.00482	0.010363	0.001968	-0.3226	LY94
4019	b_at1242	M97676	0.00482	0.010363	0.010011	-0.16313	MSX1
980	at1243	AF002020	0.00482	0.010363	0.001278	-0.1736	NPC1
1245	i_at1244	U25975	0.00482	0.010363	0.000764	-0.24651	PAK2
1225	g_at1245	X66363	0.00482	0.010363	0.000837	-0.4179	PCTK1
722	at1246	D87957	0.00482	0.010363	0.004418	-0.14751	RQCD1
3263	b_s_at1247	AI610467	0.00482	0.010363	0.000699	-0.17683	SMG1
3862	l_at1248	AJ012008	0.00482	0.010363	0.002571	-0.32997	
3613	l_at1249	AJ012008	0.00482	0.010363	0.001638	-0.16204	

**Table II: Gene Expression Profile from PBMCs of MS vs. Healthy- Highest Scoring Genes (Bonferroni analysis)**

SEQ ID NO:	Affy metri x ID no:	Identifier	TNOM PValue	Info PValue	t-Test PValue	Log FoldChange	Symbol
271	32213_at1250	AA203527	1.37E-05	1.61E-06	1.18E-07	0.281992	RPP20
272	40615_at1251	AA780049	7.44E-05	2.35E-05	7.39E-07	0.54912	FLJ21439
273	37348_s_at1252	AA845349	7.44E-05	0.0001187	7.78E-07	0.457176	TRIP7
274	39388_at1253	AA902713	2.11E-06	1.99E-06	1.44E-06	0.474378	
243	4138	AB002344	7.44E-05	5.92E-05	8.48E-07	-1.00068	KIAA0

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	<u>6 i a</u> <u>t1254</u>						346
<u>154</u>	<u>3979</u> <u>7 at1</u> <u>255</u>	AB002347	2.11E-06	1.33E-07	7.19E-10	0.371731	KIAA0 349
<u>244</u>	<u>3466</u> <u>1 at1</u> <u>256</u>	AB002348	1.37E-05	3.86E-06	2.49E-07	0.576346	KIAA0 350
<u>155</u>	<u>3225</u> <u>9 at1</u> <u>257</u>	AB002386	2.11E-06	7.73E-07	5.34E-09	0.586117	EZH1
<u>184</u>	<u>3626</u> <u>0 at1</u> <u>258</u>	AB002448	1.37E-05	5.01E-06	2.45E-07	0.468926	
<u>183</u>	<u>4043</u> <u>1 at1</u> <u>259</u>	AB007891	1.37E-05	3.86E-06	3.99E-05	0.196376	KIAA0 431
<u>173</u>	<u>3965</u> <u>0 s</u> <u>at126</u> <u>0</u>	AB007895	1.37E-05	5.01E-06	9.61E-07	0.186643	KIAA0 435
<u>257</u>	<u>3225</u> <u>3 at1</u> <u>261</u>	AB007927	2.11E-06	1.99E-06	2.12E-07	0.323787	RERE
<u>254</u>	<u>3969</u> <u>1 at1</u> <u>262</u>	AB007960	2.11E-06	9.54E-07	7.96E-06	0.447772	SH3GL B1
<u>182</u>	<u>3443</u> <u>5 at1</u> <u>263</u>	AB008775	0.0003443	0.0003041	1.88E-06	-0.80745	AQP9
<u>194</u>	<u>4124</u> <u>2 at1</u> <u>264</u>	AB011004	0.0003443	7.05E-06	1.41E-06	-1.34073	UAP1
<u>186</u>	<u>3278</u> <u>4 at1</u> <u>265</u>	AB011108	1.37E-05	5.05E-07	4.39E-07	0.453498	PRP4
<u>258</u>	<u>4143</u> <u>0 at1</u> <u>266</u>	AB011113	1.37E-05	7.05E-06	3.74E-07	0.444795	WDR7
<u>187</u>	<u>4107</u> <u>7 at1</u> <u>267</u>	AB011115	1.37E-05	5.05E-07	3.39E-07	0.382809	KIAA0 543
<u>188</u>	<u>3213</u> <u>3 at1</u> <u>268</u>	AB011161	2.57E-08	4.01E-09	9.64E-11	0.63432	PIP5K1 C
<u>197</u>	<u>3885</u> <u>4 at1</u> <u>269</u>	AB014535	1.37E-05	5.05E-07	1.04E-06	0.285282	KIAA0 635
<u>245</u>	<u>3737</u> <u>5 at1</u> <u>270</u>	AB014538	0.0003443	4.67E-05	1.98E-06	-0.63923	KIAA0 638
<u>246</u>	<u>3531</u> <u>7 at1</u> <u>271</u>	AB014579	1.37E-05	5.01E-06	6.08E-08	0.367966	MGEA 5
<u>251</u>	<u>4161</u>	AB014608	7.44E-05	9.64E-05	4.59E-06	0.41494	KIAA0



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	<u>4 at+</u> <u>272</u>						708
<u>214</u>	<u>3776</u> <u>0 at+</u> <u>273</u>	AB015019	7.44E-05	7.05E-06	2.75E-07	-0.24515	BAIAP 2
<u>210</u>	<u>3887</u> <u>3 at+</u> <u>274</u>	AB018343	1.84E-09	4.16E-10	9.05E-12	0.383078	KIAA0 800
<u>223</u>	<u>4143</u> <u>1 at+</u> <u>275</u>	AB023153	2.11E-06	1.33E-07	1.82E-08	0.895842	KIAA0 936
<u>255</u>	<u>3645</u> <u>8 at+</u> <u>276</u>	AB023235	7.44E-05	1.61E-06	1.43E-05	0.311216	KIAA1 018
<u>240</u>	<u>3235</u> <u>0 at+</u> <u>277</u>	AB026118	0.0013772	0.0001897	4.47E-06	-0.24886	MALT1
<u>235</u>	<u>3855</u> <u>5 at+</u> <u>278</u>	AB026436	7.44E-05	1.61E-06	0.000219	-0.7589	DUSP1 0
<u>247</u>	<u>3941</u> <u>7 at+</u> <u>279</u>	AB028951	2.64E-07	1.72E-07	8.78E-09	0.543028	KIAA1 028
<u>248</u>	<u>3757</u> <u>1 at+</u> <u>280</u>	AB028981	2.11E-06	7.73E-07	5.34E-07	0.282288	KIAA1 058
<u>239</u>	<u>4179</u> <u>6 at+</u> <u>281</u>	AB029015	2.64E-07	2.49E-07	5.37E-09	0.695063	PLCE2
<u>256</u>	<u>3686</u> <u>2 at+</u> <u>282</u>	AB029038	7.44E-05	1.61E-06	7.62E-05	0.364386	KIAA1 115
<u>167</u>	<u>3997</u> <u>5 at+</u> <u>283</u>	AC002400	1.37E-05	3.06E-05	2.28E-06	-0.25834	UBPH
<u>151</u>	<u>358</u> <u>at+28</u> <u>4</u>	AF000545	7.44E-05	5.23E-05	3.48E-06	-0.85393	P2Y10
<u>152</u>	<u>3188</u> <u>8 s</u> <u>at+28</u> <u>5</u>	AF001294	1.37E-05	7.05E-06	1.23E-06	-0.76359	TSSC3
<u>159</u>	<u>3592</u> <u>6 s</u> <u>at+28</u> <u>6</u>	AF004230	2.64E-07	1.72E-07	3.06E-07	0.349166	LILRB 1
<u>153</u>	<u>3827</u> <u>0 at+</u> <u>287</u>	AF005043	7.44E-05	5.23E-05	2.70E-06	0.408592	PARG
<u>178</u>	<u>3781</u> <u>9 at+</u> <u>288</u>	AF007130	2.11E-06	5.05E-07	2.51E-06	0.391811	LOC54 104
<u>179</u>	<u>3876</u> <u>4 at+</u> <u>289</u>	AF007142	0.0003443	0.0004443	3.15E-06	0.678734	

## ANNOTATED MARKED-UP SPECIFICATION

<u>180</u>	<u>3527</u> <u>3 at1</u> <u>290</u>	AF007151	1.37E-05	5.05E-07	3.25E-06	0.468343	MMS19 L
<u>156</u>	<u>1857</u> <u>at12</u> <u>94</u>	AF010193	7.44E-05	2.35E-05	1.26E-07	-1.4705	MADH 7
<u>176</u>	<u>3607</u> <u>9 at1</u> <u>292</u>	AF010309	1.37E-05	5.01E-06	7.36E-07	-0.28533	PIG3
<u>157</u>	<u>4084</u> <u>3 at1</u> <u>293</u>	AF012023	7.44E-05	5.92E-05	1.02E-06	0.50623	ICAP- 1A
<u>158</u>	<u>1445</u> <u>at12</u> <u>94</u>	AF014958	2.11E-06	4.31E-06	1.05E-07	-0.42152	CCRL2
<u>163</u>	<u>3545</u> <u>0 s</u> <u>at129</u> <u>5</u>	AF015553	2.11E-06	9.54E-07	2.61E-07	0.61214	GTF21
<u>170</u>	<u>3167</u> <u>5 s</u> <u>at129</u> <u>6</u>	AF019083	1.37E-05	5.01E-06	8.34E-07	0.17011	PTENP 1
<u>205</u>	<u>3610</u> <u>0 at1</u> <u>297</u>	AF022375	2.64E-07	8.23E-08	1.87E-11	-1.35847	VEGF
<u>165</u>	<u>3141</u> <u>0 at1</u> <u>298</u>	AF023614	1.37E-05	1.51E-05	4.79E-07	-0.20744	TACI
<u>166</u>	<u>1953</u> <u>at12</u> <u>99</u>	AF024710	8.55E-11	8.55E-11	1.13E-12	-1.95537	VEGF
<u>171</u>	<u>3836</u> <u>5 at1</u> <u>300</u>	AF026086	0.0003443	4.67E-05	2.66E-06	0.297942	PEX1
<u>193</u>	<u>3862</u> <u>8 at1</u> <u>304</u>	AF029777	1.37E-05	7.05E-06	8.27E-07	0.290159	GCN5L 2
<u>169</u>	<u>3275</u> <u>6 at1</u> <u>302</u>	AF030249	1.37E-05	1.61E-06	1.98E-07	0.534547	ECH1
<u>172</u>	<u>3779</u> <u>4 at1</u> <u>303</u>	AF035281	2.11E-06	2.48E-06	4.87E-07	0.472445	
<u>175</u>	<u>3834</u> <u>9 at1</u> <u>304</u>	AF038564	1.37E-05	1.61E-06	2.05E-07	-0.40446	ITCH
<u>204</u>	<u>4049</u> <u>8 g</u> <u>at130</u> <u>5</u>	AF040707	2.11E-06	1.99E-06	3.57E-07	0.289845	NPR2L
<u>177</u>	<u>3496</u> <u>2 at1</u> <u>306</u>	AF042386	1.37E-05	5.01E-06	0.000107	0.137192	PPIE
<u>200</u>	<u>3359</u>	AF052160	7.44E-05	1.51E-05	1.67E-06	0.623021	

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	<u>8 r a</u> <u>t1307</u>						
<u>198</u>	<u>3784</u> <u>2 at1</u> <u>308</u>	AF054176	2.11E-06	1.33E-07	6.47E-09	-0.58138	Clorf7
<u>203</u>	<u>4006</u> <u>0 r a</u> <u>t1309</u>	AF054589	0.0003443	2.35E-05	1.98E-06	0.945394	
<u>189</u>	<u>3663</u> <u>9 at1</u> <u>310</u>	AF061258	7.44E-05	9.64E-05	1.58E-06	0.622201	LIM
<u>190</u>	<u>4086</u> <u>9 at1</u> <u>311</u>	AF067853	1.37E-05	5.01E-06	5.02E-06	0.361707	ADSL
<u>191</u>	<u>4087</u> <u>0 g</u> <u>at131</u> <u>2</u>	AF069517	2.11E-06	1.33E-07	4.91E-07	0.399638	RBM6
<u>201</u>	<u>3516</u> <u>5 at1</u> <u>313</u>	AF070582	2.64E-07	1.72E-07	3.23E-08	-0.19773	MGC13 033
<u>202</u>	<u>3418</u> <u>8 at1</u> <u>314</u>	AF070606	1.37E-05	3.06E-05	1.48E-06	-0.89337	
<u>195</u>	<u>3514</u> <u>2 at1</u> <u>315</u>	AF070617	1.37E-05	3.86E-06	3.23E-07	0.323494	
<u>208</u>	<u>4183</u> <u>1 at1</u> <u>316</u>	AF077820	2.64E-07	2.19E-08	2.91E-08	0.656852	LRP5
<u>213</u>	<u>3723</u> <u>3 at1</u> <u>317</u>	AF079167	2.64E-07	2.49E-07	7.37E-10	-1.93249	OLR1
<u>211</u>	<u>3943</u> <u>0 at1</u> <u>318</u>	AF082557	0.0013772	4.67E-05	2.23E-06	0.226994	TNKS
<u>215</u>	<u>3956</u> <u>2 at1</u> <u>319</u>	AF094481	1.37E-05	5.01E-06	2.74E-07	-0.29045	CGGBP 1
<u>209</u>	<u>3147</u> <u>2 s</u> <u>at132</u> <u>0</u>	AF098641	2.64E-07	1.72E-07	1.56E-07	-0.41172	
<u>216</u>	<u>3381</u> <u>0 at1</u> <u>321</u>	AF110377	1.37E-05	5.01E-06	3.05E-05	0.361232	TRRAP
<u>252</u>	<u>4138</u> <u>4 at1</u> <u>322</u>	AF117829	7.44E-05	0.000129	2.61E-06	-0.57516	RIPK2
<u>275</u>	<u>3568</u> <u>2 at1</u> <u>323</u>	AI133727	7.44E-05	0.0001187	1.43E-06	0.181464	FLB642 1
<u>276</u>	<u>4017</u> <u>5 at1</u> <u>324</u>	AI141670	0.0003443	0.0003041	1.60E-06	-0.2494	CLCN2

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<u>277</u>	<u>4067</u> <u>0 at+</u> <u>325</u>	AI148772	0.0003443	4.67E-05	4.18E-06	-1.02619	KYNU
<u>278</u>	<u>3793</u> <u>6 at+</u> <u>326</u>	AI184802	2.64E-07	2.19E-08	2.67E-09	-0.21576	HPRP4 P
<u>279</u>	<u>3202</u> <u>1 at+</u> <u>327</u>	AI560890	2.57E-08	2.83E-08	1.80E-07	0.179028	
<u>280</u>	<u>3472</u> <u>4 at+</u> <u>328</u>	AI670100	7.44E-05	2.58E-05	7.70E-07	0.22677	GRLF1
<u>281</u>	<u>3925</u> <u>7 at+</u> <u>329</u>	AI754391	1.37E-05	3.86E-06	1.72E-06	-0.27657	KLF12
<u>282</u>	<u>3648</u> <u>4 at+</u> <u>330</u>	AI935146	0.0003443	2.35E-05	2.05E-06	-0.46726	GALN T3
<u>283</u>	<u>3585</u> <u>0 at+</u> <u>331</u>	AI950382	1.37E-05	1.61E-06	1.63E-07	-0.74128	KIAA0 585
<u>284</u>	<u>3475</u> <u>1 at+</u> <u>332</u>	AI970189	0.0003443	2.35E-05	6.16E-07	-0.75934	KIAA0 997
<u>168</u>	<u>3939</u> <u>2 at+</u> <u>333</u>	AJ002190	7.44E-05	1.61E-06	2.17E-08	0.33775	GNPAT
<u>234</u>	<u>3898</u> <u>8 at+</u> <u>334</u>	AJ007042	2.64E-07	1.72E-07	2.10E-07	0.170935	WHSC 1
<u>224</u>	<u>4072</u> <u>3 at+</u> <u>335</u>	AJ010059	2.11E-06	5.05E-07	2.95E-06	0.2235	SIT
<u>217</u>	<u>3956</u> <u>1 at+</u> <u>336</u>	AL008583	2.64E-07	2.19E-08	1.12E-08	0.250082	CBX6
<u>192</u>	<u>3704</u> <u>3 at+</u> <u>337</u>	AL021154	0.0003443	4.67E-05	2.19E-06	-0.82935	ID3
<u>222</u>	<u>3433</u> <u>3 at+</u> <u>338</u>	AL021707	0.0003443	7.05E-06	4.95E-06	-2.21462	
<u>199</u>	<u>4072</u> <u>1 g</u> <u>at+33</u> <u>9</u>	AL022398	7.44E-05	1.61E-06	8.09E-08	0.919627	
<u>199</u>	<u>4072</u> <u>0 at+</u> <u>340</u>	AL022398	7.44E-05	7.05E-06	1.10E-07	0.79713	DJ434 O14.3
<u>199</u>	<u>3373</u> <u>4 at+</u> <u>341</u>	AL022398	7.44E-05	2.58E-05	2.40E-06	0.493166	
<u>218</u>	<u>3718</u> <u>9 at+</u> <u>342</u>	AL023553	1.37E-05	1.75E-05	2.51E-06	0.226635	PMM1

## ANNOTATED MARKED-UP SPECIFICATION

<u>220</u>	<u>3267</u> <u>2 at</u> <u>343</u>	AL049387	0.0013772	0.0001897	5.12E-06	0.379296	
<u>221</u>	<u>3602</u> <u>1 at</u> <u>344</u>	AL049409	7.44E-05	1.51E-05	1.10E-06	0.714173	LEF1
<u>230</u>	<u>3368</u> <u>7 at</u> <u>345</u>	AL049782	7.44E-05	2.58E-05	7.66E-07	0.237794	
<u>231</u>	<u>3423</u> <u>9 at</u> <u>346</u>	AL049787	1.37E-05	5.01E-06	7.11E-06	0.311278	
<u>250</u>	<u>4045</u> <u>6 at</u> <u>347</u>	AL049963	0.0003443	4.67E-05	8.36E-07	-0.74421	LOC64 116
<u>226</u>	<u>4133</u> <u>5 at</u> <u>348</u>	AL050084	7.44E-05	1.61E-06	5.26E-05	0.509331	DC8
<u>227</u>	<u>3997</u> <u>6 at</u> <u>349</u>	AL050087	2.11E-06	2.48E-06	1.27E-07	-0.31279	KIAA1 785
<u>228</u>	<u>3829</u> <u>6 at</u> <u>350</u>	AL050196	1.37E-05	5.01E-06	2.00E-05	-0.24688	DKFZP 586D22 23
<u>229</u>	<u>3189</u> <u>6 at</u> <u>351</u>	AL050281	0.0003443	0.0002051	2.85E-06	0.30517	NAG
<u>232</u>	<u>3696</u> <u>8 s</u> <u>at</u> <u>352</u>	AL050353	0.0003443	2.35E-05	4.42E-06	0.179352	OIP2
<u>233</u>	<u>3809</u> <u>0 at</u> <u>353</u>	AL050371	0.0003443	2.35E-05	3.70E-06	0.493288	PISD
<u>236</u>	<u>3571</u> <u>5 at</u> <u>354</u>	AL080071	0.0003443	0.0003041	3.12E-06	0.237367	DKFZP 564M0 82
<u>237</u>	<u>3885</u> <u>9 at</u> <u>355</u>	AL080141	1.37E-05	5.01E-06	2.42E-07	0.330868	SEC31 B-1
<u>238</u>	<u>3203</u> <u>3 at</u> <u>356</u>	AL096780	1.37E-05	5.05E-07	2.13E-06	0.34487	CHKL
<u>285</u>	<u>3319</u> <u>2 g</u> <u>at</u> <u>357</u>	AW051579	1.37E-05	1.61E-06	7.58E-07	0.593476	FLJ105 12
<u>49</u>	<u>3256</u> <u>7 at</u> <u>358</u>	D10704	1.37E-05	1.75E-05	4.69E-07	-0.36791	CHK
<u>74</u>	<u>4121</u> <u>5 s</u> <u>at</u> <u>359</u>	D13891	2.11E-06	2.48E-06	4.57E-05	-0.20577	ID2
<u>75</u>	<u>3741</u>	D30758	2.11E-06	1.99E-06	1.58E-05	0.27738	CENTB

## ANNOTATED MARKED-UP SPECIFICATION

	<u>1</u> at <u>1</u> <u>360</u>						1
<u>162</u>	<u>3447</u> <u>6</u> r a <u>1361</u>	D30783	2.57E-08	2.83E-08	8.95E-10	-1.65011	EREG
<u>107</u>	<u>3852</u> <u>3</u> f a <u>1362</u>	D49677	7.44E-05	7.05E-06	4.18E-06	0.198707	U2AF1 RS2
<u>207</u>	<u>3523</u> <u>4</u> at <u>1</u> <u>363</u>	D50406	1.37E-05	3.86E-06	2.65E-05	0.461907	RECK
<u>110</u>	<u>3368</u> <u>3</u> at <u>1</u> <u>364</u>	D50525	0.0003443	4.67E-05	3.02E-06	0.486698	
<u>133</u>	<u>4066</u> <u>2</u> g at <u>136</u> <u>5</u>	D78579	1.37E-05	7.05E-06	4.25E-07	-1.65638	NR4A3
<u>133</u>	<u>4066</u> <u>1</u> at <u>1</u> <u>366</u>	D78579	7.44E-05	7.05E-06	9.62E-07	-1.61438	NR4A3
<u>134</u>	<u>3403</u> <u>4</u> at <u>1</u> <u>367</u>	D80011	7.44E-05	1.61E-06	4.20E-07	-0.35073	KIAA0 189
<u>127</u>	<u>4011</u> <u>3</u> at <u>1</u> <u>368</u>	D87119	7.44E-05	2.35E-05	1.80E-06	0.425625	GS3955
<u>127</u>	<u>717</u> at <u>136</u> <u>9</u>	D87119	7.44E-05	5.23E-05	4.62E-06	0.557116	GS3955
<u>135</u>	<u>3503</u> <u>9</u> at <u>1</u> <u>370</u>	D87466	1.37E-05	8.66E-06	1.49E-07	0.466046	KIAA0 276
<u>286</u>	<u>1877</u> <u>g</u> at <u>1</u> <u>1371</u>	HG1103- HT1103	1.37E-05	1.61E-06	1.16E-07	-0.39165	
<u>287</u>	<u>1743</u> <u>s</u> at <u>1</u> <u>1372</u>	HG2007- HT2056	7.44E-05	9.64E-05	4.01E-06	-0.41408	
<u>288</u>	<u>1842</u> at <u>13</u> <u>73</u>	HG2724- HT2820	1.37E-05	3.06E-05	5.17E-06	-1.33814	
<u>289</u>	<u>1162</u> <u>g</u> at <u>1</u> <u>1374</u>	HG3227- HT3404	2.64E-07	1.72E-07	1.68E-08	-0.25361	
<u>290</u>	<u>706</u> at <u>137</u> <u>5</u>	HG4582- HT4987	7.44E-05	2.35E-05	4.63E-07	-0.39588	
<u>30</u>	<u>3802</u> <u>9</u> at <u>1</u> <u>376</u>	J02939	7.44E-05	1.61E-06	2.16E-07	-0.87844	SLC3A 2
<u>63</u>	<u>3380</u> <u>3</u> at <u>1</u> <u>377</u>	J02973	1.37E-05	5.05E-07	2.93E-07	-1.30804	THBD
<u>66</u>	<u>1388</u>	J03258	0.0003443	0.0001695	1.21E-06	-0.58295	VDR

## ANNOTATED MARKED-UP SPECIFICATION

	<u>g</u> at <u>1378</u>						
<u>24</u>	<u>3667</u> <u>4</u> at <u>379</u>	J04130	0.0003443	2.35E-05	3.02E-06	-0.62071	SCYA4
<u>58</u>	<u>3905</u> <u>7</u> at <u>380</u>	L04733	0.0013772	2.35E-05	8.84E-07	0.306455	KNS2
<u>59</u>	<u>1125</u> <u>s</u> at <u>1381</u>	L05424	2.11E-06	1.33E-07	2.27E-09	-0.58081	CD44
<u>99</u>	<u>2061</u> <u>at</u> <u>82</u>	L12002	7.44E-05	4.67E-05	1.23E-06	0.286717	ITGA4
<u>55</u>	<u>280</u> <u>g</u> at <u>383</u>	L13740	2.64E-07	2.19E-08	5.83E-08	-1.45891	NR4A1
<u>55</u>	<u>279</u> <u>at</u> <u>4</u>	L13740	1.37E-05	5.01E-06	9.10E-08	-0.61928	NR4A1
<u>57</u>	<u>3903</u> <u>7</u> at <u>385</u>	L13773	1.37E-05	1.75E-05	6.44E-07	0.247919	MLLT2
<u>54</u>	<u>3749</u> <u>7</u> at <u>386</u>	L16499	1.37E-05	8.66E-06	5.12E-06	0.374296	HHEX
<u>79</u>	<u>3394</u> <u>3</u> at <u>387</u>	L20941	2.64E-07	1.33E-07	1.78E-06	-0.58618	FTH1
<u>70</u>	<u>1139</u> <u>at</u> <u>88</u>	L22075	2.64E-07	2.49E-07	1.10E-08	-0.55736	GNA13
<u>68</u>	<u>3237</u> <u>2</u> at <u>389</u>	L22569	1.37E-05	8.66E-06	1.52E-06	0.318129	CTSB
<u>96</u>	<u>3790</u> <u>3</u> at <u>390</u>	L25665	0.0003443	0.0001695	3.34E-06	-0.4513	GNL1
<u>90</u>	<u>1603</u> <u>g</u> at <u>1391</u>	L33881	2.64E-07	1.72E-07	5.06E-08	-0.59585	PRKCI
<u>109</u>	<u>3631</u> <u>2</u> at <u>392</u>	L40377	1.37E-05	5.05E-07	3.49E-07	-0.79409	SERPI NB8
<u>105</u>	<u>3757</u> <u>9</u> at <u>393</u>	L47738	2.57E-08	4.01E-09	7.54E-09	0.31646	PIR121
<u>148</u>	<u>1846</u> <u>at</u> <u>94</u>	L78132	7.44E-05	5.23E-05	5.15E-07	0.358576	LGALS 8
<u>46</u>	<u>3663</u> <u>6</u> at <u>395</u>	M12267	0.0003443	0.0001695	4.07E-06	-0.3279	OAT
<u>60</u>	<u>1106</u> <u>s</u> at	M12959	7.44E-05	2.58E-05	1.61E-06	0.128482	TRA@

## ANNOTATED MARKED-UP SPECIFICATION

	<u>1396</u>						
<u>39</u>	<u>3940</u> <u>2_at1</u> <u>397</u>	M15330	8.55E-11	8.55E-11	2.49E-12	-2.13825	IL1B
<u>25</u>	<u>3537</u> <u>2_r_a</u> <u>1398</u>	M17017	7.44E-05	0.0001187	1.43E-06	-1.74073	IL8
<u>44</u>	<u>3399</u> <u>3_at1</u> <u>399</u>	M22919	2.64E-07	3.12E-07	9.52E-08	-0.81053	MYL6
<u>35</u>	<u>3979</u> <u>1_at1</u> <u>400</u>	M23114	2.11E-06	4.31E-06	1.59E-07	-0.96141	ATP2A 2
<u>43</u>	<u>3460</u> <u>9_g</u> <u>at140</u> <u>1</u>	M24194	7.44E-05	1.61E-06	4.38E-06	0.560895	GNB2L 1
<u>36</u>	<u>3264</u> <u>0_at1</u> <u>402</u>	M24283	0.0003443	4.67E-05	3.71E-06	-1.32611	ICAM1
<u>85</u>	<u>3668</u> <u>0_at1</u> <u>403</u>	M24895	2.11E-06	1.33E-07	1.72E-08	0.476779	AMY2 B
<u>37</u>	<u>875</u> <u>g_at1</u> <u>404</u>	M26683	7.44E-05	0.0001187	3.70E-06	-0.16179	SCYA2
<u>40</u>	<u>1368</u> <u>at14</u> <u>05</u>	M27492	0.0003443	0.0004017	2.01E-06	-0.32619	IL1R1
<u>41</u>	<u>1369</u> <u>s_at</u> <u>1406</u>	M28130	7.44E-05	4.67E-05	8.02E-07	-2.27292	IL8
<u>64</u>	<u>1372</u> <u>at14</u> <u>07</u>	M31165	7.44E-05	5.23E-05	1.38E-06	-0.34617	TNFAI P6
<u>61</u>	<u>1373</u> <u>at14</u> <u>08</u>	M31523	1.37E-05	1.75E-05	2.09E-06	0.36898	TCF3
<u>33</u>	<u>3402</u> <u>2_at1</u> <u>409</u>	M36821	1.37E-05	8.66E-06	2.21E-07	-0.36334	GRO3
<u>62</u>	<u>3840</u> <u>4_at1</u> <u>410</u>	M55153	7.44E-05	2.58E-05	4.77E-06	-0.27465	TGM2
<u>45</u>	<u>1378</u> <u>g_at</u> <u>1411</u>	M58603	7.44E-05	5.23E-05	1.28E-06	-0.73537	NFKB1
<u>26</u>	<u>2036</u> <u>s_at</u> <u>1412</u>	M59040	0.0013772	2.35E-05	2.82E-06	-0.46271	CD44
<u>65</u>	<u>4084</u> <u>2_at1</u> <u>413</u>	M60784	7.44E-05	5.23E-05	1.24E-06	0.559903	SNRPA
<u>95</u>	<u>3218</u> <u>1_at1</u>	M60922	7.44E-05	1.51E-05	4.47E-08	0.39657	FLOT2



## ANNOTATED MARKED-UP SPECIFICATION

	414						
38	<u>1737</u> <u>s at</u> <u>1415</u>	M62403	7.44E-05	5.23E-05	5.57E-07	-0.53749	IGFBP 4
27	<u>3619</u> <u>0 at</u> <u>416</u>	M63256	0.0003443	5.92E-05	6.54E-07	0.454561	CDR2
31	<u>4036</u> <u>5 at</u> <u>417</u>	M63904	2.57E-08	1.03E-08	5.38E-09	-0.59612	GNA15
67	<u>3610</u> <u>1 s</u> <u>at</u> <u>1418</u>	M63978	0.0003443	4.67E-05	1.77E-06	-0.44762	VEGF
42	<u>242</u> <u>at</u> <u>1419</u>	M64571	1.84E-09	1.84E-09	2.41E-11	0.416659	MAP4
91	<u>3832</u> <u>6 at</u> <u>420</u>	M69199	2.11E-06	1.99E-06	1.45E-07	-1.9021	G0S2
48	<u>1252</u> <u>at</u> <u>1421</u>	M73547	1.37E-05	5.01E-06	9.20E-08	0.438897	D5S346
34	<u>1231</u> <u>at</u> <u>1422</u>	M74525	2.11E-06	2.48E-06	3.50E-07	-0.61792	UBE2B
28	<u>3218</u> <u>6 at</u> <u>423</u>	M80244	0.0003443	7.05E-06	2.72E-06	-0.8522	SLC7A 5
32	<u>3782</u> <u>5 at</u> <u>424</u>	M84443	1.37E-05	5.05E-07	4.08E-07	0.303567	GALK2
29	<u>3979</u> <u>9 at</u> <u>425</u>	M94856	7.44E-05	5.23E-05	4.99E-06	-0.23847	FABP5
47	<u>210</u> <u>at</u> <u>1426</u>	M95678	0.0003443	7.05E-06	2.00E-06	0.432923	PLCB2
241	<u>4142</u> <u>5 at</u> <u>427</u>	M98833	7.44E-05	1.61E-06	1.52E-06	0.434288	FLI1
261	<u>3596</u> <u>9 at</u> <u>428</u>	N23137	2.11E-06	2.48E-06	2.06E-07	0.247311	MPHO SPH9
261	<u>3597</u> <u>0 g</u> <u>at</u> <u>1429</u>	N23137	0.0013772	0.0001695	4.12E-06	0.244083	MPHO SPH9
262	<u>4088</u> <u>5 s</u> <u>at</u> <u>1430</u>	N30151	7.44E-05	1.61E-06	5.05E-05	0.393521	STX16
263	<u>4056</u> <u>4 at</u> <u>431</u>	N42007	2.11E-06	2.48E-06	9.19E-05	0.167986	NUP50

## ANNOTATED MARKED-UP SPECIFICATION

<u>264</u>	<u>3969</u> <u>3 at</u> <u>432</u>	N53547	7.44E-05	8.56E-05	1.80E-07	0.296678	MGC55 08
<u>269</u>	<u>3271</u> <u>5 at</u> <u>433</u>	N90862	1.37E-05	5.05E-07	3.28E-08	0.43576	VAMP 8
<u>270</u>	<u>3421</u> <u>0 at</u> <u>434</u>	N90866	2.64E-07	8.23E-08	2.76E-08	0.304525	CDW52
<u>265</u>	<u>3955</u> <u>1 at</u> <u>435</u>	N98667	1.37E-05	8.66E-06	3.38E-07	0.367127	KIAA1 696
<u>260</u>	<u>3477</u> <u>9 at</u> <u>436</u>	R90942	1.37E-05	5.01E-06	1.05E-05	-0.17696	ST6GA LNACI V
<u>53</u>	<u>3296</u> <u>2 at</u> <u>437</u>	S52028	2.11E-06	5.05E-07	9.62E-08	-0.81662	CTH
<u>87</u>	<u>3206</u> <u>6 g</u> <u>at</u> <u>438</u>	S68134	0.0003443	7.05E-06	8.37E-07	-1.64652	CREM
<u>87</u>	<u>3206</u> <u>5 at</u> <u>439</u>	S68134	0.0003443	7.05E-06	4.35E-06	-2.47105	CREM
<u>86</u>	<u>3206</u> <u>7 at</u> <u>440</u>	S68271	0.0003443	7.05E-06	3.03E-06	-2.07185	CREM
<u>92</u>	<u>3150</u> <u>8 at</u> <u>441</u>	S73591	1.37E-05	1.51E-05	4.68E-06	0.414777	VDUP1
<u>50</u>	<u>545</u> <u>g at</u> <u>442</u>	S76638	7.44E-05	2.35E-05	7.47E-07	-0.35416	NFKB2
<u>51</u>	<u>1347</u> <u>at</u> <u>43</u>	S78187	7.44E-05	1.61E-06	1.95E-05	0.203265	CDC25 B
<u>52</u>	<u>3620</u> <u>9 at</u> <u>444</u>	S78771	0.0003443	5.92E-05	2.55E-06	-0.31389	BRD2
<u>126</u>	<u>1237</u> <u>at</u> <u>45</u>	S81914	0.0003443	7.05E-06	4.18E-07	-1.59146	IER3
<u>69</u>	<u>3384</u> <u>9 at</u> <u>446</u>	U02020	1.37E-05	8.66E-06	1.37E-06	-1.13863	PBEF
<u>71</u>	<u>553</u> <u>g at</u> <u>447</u>	U02570	1.37E-05	2.81E-05	1.26E-06	0.432431	ARHG API
<u>73</u>	<u>554</u> <u>at</u> <u>448</u>	U03634	1.37E-05	1.75E-05	1.00E-06	-0.21467	LBC
<u>76</u>	<u>1069</u> <u>at</u> <u>49</u>	U04636	0.0003443	5.92E-05	2.81E-06	-1.85123	PTGS2

## ANNOTATED MARKED-UP SPECIFICATION

<u>83</u>	<u>1796</u> <u>s at</u> <u>1450</u>	U05681	7.44E-05	5.23E-05	3.37E-06	-0.35383	BCL3
<u>81</u>	<u>1635</u> <u>at14</u> <u>51</u>	U07563	7.44E-05	2.35E-05	4.91E-07	-0.25016	ABL1
<u>82</u>	<u>189</u> <u>s at1</u> <u>452</u>	U09937	1.84E-09	4.16E-10	2.04E-09	-1.21578	PLAUR
<u>77</u>	<u>3973</u> <u>4 at1</u> <u>453</u>	U10117	7.44E-05	1.51E-05	4.07E-06	0.563673	SCYE1
<u>80</u>	<u>3849</u> <u>1 at1</u> <u>454</u>	U11732	1.37E-05	3.86E-06	3.04E-07	-0.22574	ETV6
<u>101</u>	<u>4065</u> <u>9 at1</u> <u>455</u>	U12767	7.44E-05	1.61E-06	2.84E-07	-1.23483	NR4A3
<u>101</u>	<u>190</u> <u>at145</u> <u>6</u>	U12767	0.0003443	7.05E-06	2.55E-07	-2.13744	NR4A3
<u>84</u>	<u>525</u> <u>g at1</u> <u>457</u>	U13695	7.44E-05	1.61E-06	1.11E-05	0.805607	PMS1
<u>88</u>	<u>3793</u> <u>8 at1</u> <u>458</u>	U15552	1.37E-05	5.01E-06	1.67E-05	-0.68094	HSU15 552
<u>94</u>	<u>3692</u> <u>9 at1</u> <u>459</u>	U17760	0.0003443	7.05E-06	4.25E-06	-0.84472	LAMB 3
<u>131</u>	<u>1243</u> <u>at14</u> <u>60</u>	U18300	7.44E-05	0.000129	2.43E-06	0.183171	DDB2
<u>93</u>	<u>3978</u> <u>1 at1</u> <u>461</u>	U20982	2.11E-06	1.99E-06	1.20E-08	-0.67125	IGFBP 4
<u>104</u>	<u>3345</u> <u>6 at1</u> <u>462</u>	U24166	7.44E-05	1.61E-06	7.52E-06	-0.45293	MAPR E1
<u>121</u>	<u>3770</u> <u>6 at1</u> <u>463</u>	U28811	0.0003443	7.05E-06	1.33E-06	0.32855	GLG1
<u>97</u>	<u>493</u> <u>at146</u> <u>4</u>	U29171	1.37E-05	5.01E-06	1.10E-06	-0.6032	CSNK1 D
<u>98</u>	<u>3257</u> <u>9 at1</u> <u>465</u>	U29175	1.37E-05	8.66E-06	1.90E-06	0.266342	SMAR CA4
<u>181</u>	<u>3615</u> <u>9 s</u> <u>at146</u> <u>6</u>	U29185	2.11E-06	7.73E-07	1.56E-07	-1.08006	PRNP
<u>100</u>	<u>3842</u> <u>9 at1</u> <u>467</u>	U29344	2.11E-06	9.54E-07	2.35E-07	-0.43842	FASN

## ANNOTATED MARKED-UP SPECIFICATION

<u>106</u>	<u>198</u> <u>g at</u> <u>468</u>	U29656	2.11E-06	7.73E-07	7.52E-08	0.353186	NME3
<u>106</u>	<u>197</u> <u>at</u> <u>469</u>	U29656	7.44E-05	0.000129	4.31E-06	0.471876	NME3
<u>102</u>	<u>496</u> <u>s at</u> <u>470</u>	U32324	1.37E-05	5.05E-07	3.21E-08	0.334966	IL11RA
<u>103</u>	<u>3351</u> <u>3 at</u> <u>471</u>	U33017	2.64E-07	1.72E-07	5.20E-07	0.373581	SLAM
<u>112</u>	<u>3977</u> <u>9 at</u> <u>472</u>	U38847	7.44E-05	2.35E-05	9.91E-07	0.222946	TARBP 1
<u>111</u>	<u>3891</u> <u>1 at</u> <u>473</u>	U41815	1.37E-05	5.05E-07	2.16E-07	-0.96931	NUP98
<u>124</u>	<u>3886</u> <u>8 at</u> <u>474</u>	U43774	0.0003443	2.35E-05	8.80E-07	-0.39938	FCAR
<u>118</u>	<u>162</u> <u>at</u> <u>475</u>	U44839	2.11E-06	9.54E-07	2.54E-07	-0.97008	USP11
<u>120</u>	<u>3772</u> <u>3 at</u> <u>476</u>	U47414	2.11E-06	9.54E-07	2.31E-06	0.370736	CCNG2
<u>113</u>	<u>3440</u> <u>5 at</u> <u>477</u>	U47927	2.57E-08	2.83E-08	5.53E-09	0.545592	USP5
<u>115</u>	<u>1788</u> <u>s at</u> <u>478</u>	U48807	1.37E-05	5.01E-06	4.97E-08	-0.93178	DUSP4
<u>119</u>	<u>3297</u> <u>7 at</u> <u>479</u>	U49187	7.44E-05	1.51E-05	1.48E-06	0.671467	C6orf32
<u>119</u>	<u>3297</u> <u>8 g</u> <u>at</u> <u>480</u>	U49187	7.44E-05	9.64E-05	3.53E-06	0.511392	C6orf32
<u>114</u>	<u>3722</u> <u>9 at</u> <u>481</u>	U49844	7.44E-05	7.05E-06	3.67E-07	0.47168	ATR
<u>130</u>	<u>1527</u> <u>s at</u> <u>482</u>	U50527	1.37E-05	5.01E-06	5.11E-06	0.416543	
<u>122</u>	<u>3812</u> <u>0 at</u> <u>483</u>	U50928	7.44E-05	1.61E-06	4.72E-06	0.302213	PKD2
<u>116</u>	<u>3974</u> <u>9 at</u> <u>484</u>	U51007	7.44E-05	1.51E-05	1.49E-06	0.309996	PSMD4
<u>138</u>	<u>3253</u> <u>9 at</u> <u>485</u>	U51205	1.37E-05	5.05E-07	2.65E-07	-0.76279	COP9

## ANNOTATED MARKED-UP SPECIFICATION

<u>129</u>	<u>3256</u> <u>3 at</u> <u>486</u>	U51478	7.44E-05	2.35E-05	6.10E-07	-0.58	ATPIB 3
<u>117</u>	<u>3606</u> <u>0 at</u> <u>487</u>	U51920	2.11E-06	1.33E-07	7.01E-08	-0.28142	SRP54
<u>128</u>	<u>3435</u> <u>6 at</u> <u>488</u>	U52960	2.11E-06	1.61E-06	1.51E-07	-0.84863	SURB7
<u>125</u>	<u>806</u> <u>at</u> <u>489</u>	U56998	0.0003443	7.05E-06	3.70E-06	-0.74294	CNK
<u>141</u>	<u>4038</u> <u>5 at</u> <u>490</u>	U64197	1.84E-09	1.84E-09	2.95E-10	-0.62373	SCYA2 0
<u>132</u>	<u>1789</u> <u>at</u> <u>491</u>	U65928	7.44E-05	4.67E-05	2.85E-07	0.408918	COP55
<u>164</u>	<u>3210</u> <u>5 f a</u> <u>492</u>	U66063	2.11E-06	2.48E-06	4.70E-07	0.277185	CAMK 2G
<u>161</u>	<u>4013</u> <u>8 at</u> <u>493</u>	U70735	1.37E-05	8.66E-06	1.82E-06	0.249185	MOV34 -34KD
<u>139</u>	<u>3522</u> <u>7 at</u> <u>494</u>	U72066	2.57E-08	1.03E-08	4.33E-08	-0.34482	RBBP8
<u>136</u>	<u>3193</u> <u>5 s</u> <u>at</u> <u>495</u>	U75968	2.11E-06	1.99E-06	4.36E-06	0.139542	DDX11
<u>137</u>	<u>4028</u> <u>9 at</u> <u>496</u>	U78107	8.55E-11	3.69E-11	4.04E-12	-0.43769	NAPG
<u>174</u>	<u>3810</u> <u>4 at</u> <u>497</u>	U78302	2.64E-07	1.72E-07	2.41E-08	0.329878	DECR1
<u>140</u>	<u>1209</u> <u>at</u> <u>498</u>	U78798	2.57E-08	4.01E-09	1.11E-06	-0.3172	TRAF6
<u>142</u>	<u>3825</u> <u>2 s</u> <u>at</u> <u>499</u>	U84007	7.44E-05	1.61E-06	0.000235	0.236422	AGL
<u>143</u>	<u>3574</u> <u>1 at</u> <u>500</u>	U85245	7.44E-05	1.61E-06	4.57E-07	0.365266	PIP5K2 B
<u>150</u>	<u>4060</u> <u>6 at</u> <u>501</u>	U88629	0.0003443	4.67E-05	9.58E-07	-0.32607	ELL2
<u>147</u>	<u>4132</u> <u>3 at</u> <u>502</u>	U90917	1.37E-05	1.61E-06	3.89E-07	0.433406	FOX M1
<u>196</u>	<u>3470</u> <u>7 at</u> <u>503</u>	U91543	2.64E-07	3.12E-07	2.01E-07	0.478678	CHD3

## ANNOTATED MARKED-UP SPECIFICATION

	<del>503</del>						
<u>149</u>	<del>3827</del> <del>6_at1</del> <del>504</del>	U91616	1.37E-05	5.05E-07	1.27E-07	-0.80419	NFKB1 E
<u>160</u>	<del>3530</del> <del>3_at1</del> <del>505</del>	U96876	7.44E-05	1.61E-06	3.54E-06	-0.45317	INSIG1
<u>185</u>	<del>4060</del> <del>7_at1</del> <del>506</del>	U97105	1.37E-05	1.75E-05	6.56E-07	1.00615	DPYSL 2
<u>266</u>	<del>3929</del> <del>6_at1</del> <del>507</del>	W28319	1.37E-05	5.01E-06	1.50E-05	0.294631	FBLN1
<u>267</u>	<del>3332</del> <del>8_at1</del> <del>508</del>	W28612	1.37E-05	5.01E-06	1.70E-06	-0.25519	
<u>268</u>	<del>3685</del> <del>6_at1</del> <del>509</del>	W28743	0.0003443	7.05E-06	2.78E-06	-0.28926	PP1628
<u>18</u>	<del>430</del> <del>at151</del> <del>0</del>	X00737	2.11E-06	9.54E-07	5.21E-08	-0.67074	NP
<u>12</u>	<del>4148</del> <del>5_at1</del> <del>511</del>	X02152	1.37E-05	5.05E-07	4.63E-08	-0.75601	LDHA
<u>4</u>	<del>3390</del> <del>8_at1</del> <del>512</del>	X04366	1.37E-05	2.81E-05	5.11E-06	0.346076	CAPN1
<u>10</u>	<del>1520</del> <del>s_at</del> <del>1513</del>	X04500	2.64E-07	1.72E-07	3.43E-10	-2.12121	IL1B
<u>6</u>	<del>3975</del> <del>3_at1</del> <del>514</del>	X06256	1.37E-05	2.35E-05	4.89E-07	-0.7357	ITGA5
<u>16</u>	<del>4089</del> <del>6_at1</del> <del>515</del>	X13403	7.44E-05	5.92E-05	4.21E-07	0.146032	POU2F 1
<u>21</u>	<del>1866</del> <del>g_at</del> <del>1516</del>	X15217	7.44E-05	4.67E-05	3.77E-07	-0.2371	SKIL
<u>20</u>	<del>4149</del> <del>9_at1</del> <del>517</del>	X15218	8.55E-11	8.55E-11	1.40E-10	-1.41501	SKI
<u>14</u>	<del>4007</del> <del>4_at1</del> <del>518</del>	X16396	0.0003443	0.0002051	3.27E-06	-0.6151	MTHF D2
<u>7</u>	<del>4026</del> <del>8_at1</del> <del>519</del>	X16706	7.44E-05	1.61E-06	1.23E-06	-1.09747	FOSL2
<u>11</u>	<del>4126</del> <del>6_at1</del> <del>520</del>	X53586	1.37E-05	8.66E-06	3.40E-07	0.51291	ITGA6
<u>1</u>	<del>3214</del> <del>5_at1</del> <del>521</del>	X58141	7.44E-05	9.64E-05	1.75E-06	0.384254	ADD1

## ANNOTATED MARKED-UP SPECIFICATION

<u>3</u>	<u>3729</u> <u>4 at</u> <u>522</u>	X61123	7.44E-05	0.0001057	4.17E-07	-1.15256	BTG1
<u>13</u>	<u>4036</u> <u>2 at</u> <u>523</u>	X61498	7.44E-05	1.61E-06	8.80E-07	-0.49884	NFKB2
<u>5</u>	<u>3271</u> <u>6 at</u> <u>524</u>	X62535	1.37E-05	1.61E-06	5.68E-07	0.243937	DGKA
<u>249</u>	<u>3736</u> <u>5 at</u> <u>525</u>	X63368	2.11E-06	5.05E-07	2.30E-08	-0.55432	DNAJB 2
<u>2</u>	<u>4088</u> <u>1 at</u> <u>526</u>	X64330	7.44E-05	7.05E-06	2.27E-06	0.297851	ACLY
<u>22</u>	<u>3918</u> <u>3 at</u> <u>527</u>	X66363	2.64E-07	1.72E-07	6.53E-07	-0.24505	PCTK1
<u>9</u>	<u>3790</u> <u>4 s</u> <u>at</u> <u>528</u>	X66436	0.0003443	8.56E-05	1.88E-06	-0.26662	
<u>15</u>	<u>424</u> <u>s at</u> <u>529</u>	X66945	7.44E-05	1.51E-05	1.91E-07	-0.35494	FGFR1
<u>23</u>	<u>1983</u> <u>at</u> <u>530</u>	X68452	2.57E-08	4.01E-09	9.12E-11	-0.26618	CCND2
<u>19</u>	<u>3244</u> <u>4 at</u> <u>531</u>	X69392	2.64E-07	1.33E-07	1.10E-08	0.297444	RPL26
<u>212</u>	<u>382</u> <u>at</u> <u>532</u>	X70218	1.37E-05	3.06E-05	2.44E-06	-0.74691	PPP4C
<u>72</u>	<u>4116</u> <u>9 at</u> <u>533</u>	X74039	1.84E-09	4.16E-10	1.51E-10	-0.67381	PLAUR
<u>242</u>	<u>3806</u> <u>4 at</u> <u>534</u>	X79882	1.37E-05	5.05E-07	1.78E-07	0.520965	MVP
<u>89</u>	<u>3846</u> <u>6 at</u> <u>535</u>	X82153	7.44E-05	1.61E-06	2.27E-06	0.47844	CTSK
<u>253</u>	<u>3728</u> <u>3 at</u> <u>536</u>	X82209	2.11E-06	5.05E-07	1.37E-09	-0.45281	MN1
<u>108</u>	<u>3661</u> <u>4 at</u> <u>537</u>	X87949	7.44E-05	1.61E-06	4.05E-07	-0.54468	HSPA5
<u>123</u>	<u>3377</u> <u>4 at</u> <u>538</u>	X98172	7.44E-05	4.67E-05	5.29E-07	0.507556	CASP8
<u>146</u>	<u>3232</u> <u>9 at</u> <u>539</u>	X99142	1.37E-05	8.66E-06	1.24E-06	-0.29773	KRTH B6

## ANNOTATED MARKED-UP SPECIFICATION

144	<u>3915</u> <u>9 at+</u> <u>540</u>	X99656	1.37E-05	5.05E-07	1.68E-06	-0.23553	SH3GL1
17	<u>3718</u> <u>5 at+</u> <u>541</u>	Y00630	2.57E-08	3.70E-08	6.65E-09	-2.38485	SERPINB2
145	<u>3593</u> <u>6 g</u> <u>at+</u> <u>542</u>	Y08683	1.37E-05	5.05E-07	4.71E-06	0.492738	CPT1B
206	<u>4072</u> <u>9 s</u> <u>at+</u> <u>543</u>	Y14768	1.37E-05	5.05E-07	7.26E-08	0.248383	LTB
219	<u>3851</u> <u>8 at+</u> <u>544</u>	Y18004	1.37E-05	5.01E-06	4.19E-07	-0.9465	SCML2
8	<u>3753</u> <u>6 at+</u> <u>545</u>	Z11697	1.37E-05	5.05E-07	3.55E-06	-1.21033	CD83
56	<u>3568</u> <u>5 at+</u> <u>546</u>	Z14000	0.0003443	0.0002051	3.91E-06	-0.33734	RING1
78	<u>3485</u> <u>7 at+</u> <u>547</u>	Z24724	2.64E-07	2.19E-08	5.96E-09	-1.10426	
259	<u>3358</u> <u>8 at+</u> <u>548</u>	Z32860	1.37E-05	5.01E-06	7.81E-06	0.133192	
225	<u>3975</u> <u>6 g</u> <u>at+</u> <u>549</u>	Z93930	2.64E-07	2.49E-07	2.42E-05	-0.39839	XBP1

Table III: Differential Gene Expression in acute MS relapse vs. remission

Affy metrix ID no: SEQ- ID- NO:	Identifier	TNOM PValue	Info PValue	t-Test PValue	Log Fold Change	Symbol
<u>3859</u> <u>2 s</u> <u>at+</u> <u>550</u>	AI828210	5.38E-06	5.38E-06	8.37E-06	-0.18947	KIAA0284
<u>4009</u> <u>6 at+</u> <u>551</u>	D14710	6.73E-05	3.19E-05	2.89E-05	-0.35496	ATP5A1
<u>3581</u> <u>6 at+</u>	U46692	6.73E-05	3.19E-05	0.000284	-0.49741	CSTB



## ANNOTATED MARKED-UP SPECIFICATION

552						
3331						
8 at 4						
553	AF061261	6.73E-05	3.19E-05	3.22E-05	-0.28274	MBLL
3969						
8 at 4						
554	U51712	6.73E-05	3.19E-05	0.003464	-0.42775	SMAP31
3585						
2 at 4						
555	AB014558	6.73E-05	4.25E-05	0.000473	0.694784	CRY2
4145						
8 at 4						
556	AB007936	6.73E-05	4.25E-05	0.000958	-0.25409	KIAA0467
3488						
0 at 4						
557	AC002115	6.73E-05	4.25E-05	0.000147	0.622841	MGC10433
3496						
2 at 4						
558	AF052160	6.73E-05	4.25E-05	0.000182	-0.46468	
855						
at 4 55						
9	S78085	0.000538	0.000104	0.000102	-0.55064	PDCD2
3883						
9 at 4						
560	AL096719	0.000538	0.000104	0.000089	-0.22287	PFN2
3617						
6 at 4						
561	U61234	0.000538	0.000104	0.000844	0.299182	TBCC
3739						
1 at 4						
562	X12451	0.000538	0.000251	0.000876	1.04444	CTSL
4033						
7 at 4						
563	M35531	0.000538	0.000251	0.000241	-0.20303	FUT1
1457						
at 4 5						
64	M64174	0.000538	0.000251	3.43E-05	-0.5508	JAK1
4142						
3 at 4						
565	AB018269	0.000538	0.000251	7.39E-05	-0.18186	KIAA0726
3613						
0 f						
at 4 56						
6	R92331	0.000538	0.000251	0.000104	0.289994	MT1E
828						
at 4 56						
7	U19487	0.000538	0.000251	0.001738	-0.25888	PTGER2
3984						
7 at 4						
568	AF040965	0.000538	0.000251	0.000775	0.48898	RES4-25
3297						
4 at 4						
569	U07563	0.000538	0.000251	3.61E-05	-0.16779	RRP4
3631						
2 at 4	L40377	0.000538	0.000251	0.009479	0.452416	SERPINB8

## ANNOTATED MARKED-UP SPECIFICATION

570						
3807 0 at 4 571	AL080234	0.000538	0.000251	0.000377	-0.52631	
3547 9 at 4 572	AJ242015	0.003096	0.00039	0.013957	0.281618	ADAM28
3931 7 at 4 573	D86324	0.003096	0.00039	0.001801	-0.34728	CMAH
3319 5 at 4 574	M94065	0.003096	0.00039	0.002391	-0.13976	DHODH
3481 0 at 4 575	AC004382	0.003096	0.00039	0.000121	-0.20383	DKFZP434K046
3530 0 at 4 576	X54326	0.003096	0.00039	0.002734	-0.39559	EPRS
4043 3 at 4 577	W25921	0.003096	0.00039	9.41E-05	-0.39027	GNS
3501 0 at 4 578	X92110	0.003096	0.00039	0.000103	-1.00581	HCGVIII-1
4091 3 at 4 579	W28589	0.003096	0.00039	0.000225	-0.20949	HSPD1
3341 1 g at 4-58 0	S66213	0.003096	0.00039	0.000134	-0.28606	ITGA6
3723 2 at 4 581	AB011158	0.000538	0.00039	0.000047	-0.163	KIAA0586
4119 1 at 4 582	AB023209	0.003096	0.00039	0.003354	-0.09151	KIAA0992
4003 6 at 4 583	AF035940	0.003096	0.00039	0.008457	0.282437	MAGOH
588 at 4-58 4	M31724	0.003096	0.00039	0.000671	0.569343	PTPN1
1318 at 4-5 85	X74262	0.003096	0.00039	0.000062	-0.37623	RBBP4
1119 at 4-5 86	J05249	0.003096	0.00039	0.00045	-0.52346	RPA2
3436 2 at 4 587	M55531	0.003096	0.00039	0.023054	-0.22329	SLC2A5
3514 9 at 4	AI865431	0.003096	0.00039	0.00027	0.423067	TNFRSF5

## ANNOTATED MARKED-UP SPECIFICATION

<del>588</del>						
<del>3137</del> <del>2 at 4</del> <del>589</del>	W28203	0.003096	0.00039	0.007983	-0.17484	
<del>3403</del> <del>6 at 4</del> <del>590</del>	W28667	0.003096	0.00039	0.000846	-0.49488	
<del>3931</del> <del>5 at 4</del> <del>591</del>	D13628	0.000538	0.000529	0.034335	-0.10398	ANGPT1
<del>3701</del> <del>2 at 4</del> <del>592</del>	U03271	0.000538	0.000529	0.000286	-0.1675	CAPZB
<del>3801</del> <del>7 at 4</del> <del>593</del>	U05259	0.000538	0.000529	0.003589	0.551328	CD79A
<del>3790</del> <del>2 at 4</del> <del>594</del>	L13278	0.000538	0.000529	7.27E-05	-0.43636	CRYZ
<del>4061</del> <del>9 at 4</del> <del>595</del>	M91670	0.000538	0.000529	0.003472	0.600255	E2-EPF
<del>3896</del> <del>1 at 4</del> <del>596</del>	AB029030	0.000538	0.000529	0.000657	-0.13458	KIAA1107
<del>4130</del> <del>4 at 4</del> <del>597</del>	AF016098	0.000538	0.000529	0.000433	-0.16189	NRP2
<del>3504</del> <del>7 at 4</del> <del>598</del>	X76091	0.000538	0.000529	0.004691	0.161349	RFX2
<del>3758</del> <del>3 at 4</del> <del>599</del>	U52191	0.000538	0.000529	0.00229	1.2356	SMCY
<del>4112</del> <del>1 at 4</del> <del>600</del>	AA203345	0.000538	0.000529	0.001228	-0.50409	STX16
<del>784</del> <del>g at 4</del> <del>601</del>	U96113	0.000538	0.000529	0.000394	-0.41425	WWP1
<del>3165</del> <del>6 at 4</del> <del>602</del>	AL050263	0.000538	0.000529	0.000224	-0.15981	
<del>4079</del> <del>8 s</del> <del>at 4</del> <del>603</del>	Z48579	0.000538	0.000799	0.000184	-0.30836	ADAM10
<del>4110</del> <del>9 at 4</del> <del>604</del>	M31452	0.000538	0.000799	0.002899	-0.13022	C4BPA
<del>4016</del> <del>2 s</del> <del>at 4</del> <del>605</del>	AC003107	0.000538	0.000799	0.000262	-0.16818	COMP
<del>893</del>	M91670	0.000538	0.000799	0.000792	0.41925	E2-EPF

## ANNOTATED MARKED-UP SPECIFICATION

at+60 6						
3645 8 at+ 607	AB023235	0.000538	0.000799	0.001348	-0.30138	KIAA1018
3743 6 at+ 608	X89960	0.000538	0.000799	0.026837	-0.35169	MCSP
3660 8 at+ 609	D55654	0.000538	0.000799	0.019331	-0.2254	MDH1
3856 9 at+ 610	U02683	0.000538	0.000799	0.030035	-0.09324	NRF1
858 at+61 1	S90469	0.000538	0.000799	0.000785	0.23032	POR
3810 8 at+ 612	AF020543	0.000538	0.000799	0.004286	-0.25061	PPT2
3621 5 at+ 613	M34181	0.000538	0.000799	0.000055	-0.5883	PRKACB
3373 0 at+ 614	AF095448	0.000538	0.000799	0.000588	-0.24961	RAI3
4136 3 at+ 615	AF027150	0.000538	0.000799	0.000979	-0.16012	SIP1
3367 8 i a t+61 6	X02344	0.000538	0.000799	0.000918	0.430531	TUBB2
3367 9 f at+61 7	X02344	0.000538	0.000799	0.002225	0.296682	TUBB2
3766 2 at+ 618	AI701164	0.000538	0.000799	0.000115	-0.23639	UBE2G1
783 at+61 9	U96113	0.000538	0.000799	9.77E-05	-0.45711	WWP1
3330 6 at+ 620	AF016052	0.000538	0.000799	0.001254	-0.19092	ZNF24
3820 1 at+ 621	U21551	0.003096	0.00103	0.000836	0.278219	BCAT1
1920 s at 1622	X77794	0.003096	0.00103	3.72E-05	-0.81938	CCNG1
3523 0 at+ 623	AF070530	0.003096	0.00103	0.014908	0.276942	CL24751

## ANNOTATED MARKED-UP SPECIFICATION

3204 5 at 4 624	AB002331	0.003096	0.00103	0.001714	-0.17304	DATF1
3673 2 at 4 625	AI004207	0.003096	0.00103	0.000762	-0.1648	FLJ00002
905 at 4 626	L76200	0.003096	0.00103	0.000824	0.444479	GUK1
3350 8 at 4 627	U26398	0.003096	0.00103	0.001182	-0.29185	INPP4A
3820 3 at 4 628	U69883	0.003096	0.00103	0.007922	0.103614	KCNN1
3737 7 i a at 4 629	M13452	0.003096	0.00103	0.000467	0.405856	LMNA
4128 9 at 4 630	AA126505	0.003096	0.00103	0.002	-0.39781	NCAM1
3833 5 at 4 631	U88620	0.003096	0.00103	0.007562	-0.3532	OGG1
227 g at 4 632	M33336	0.003096	0.00103	0.001568	-0.26454	PRKAR1A
3787 6 at 4 633	AB015982	0.003096	0.00103	0.000382	-0.27486	PRKCN
4144 6 f at 4 634	H68340	0.003096	0.00103	0.001222	0.516352	RNAHP
3437 5 at 4 635	M28225	0.003096	0.00103	0.000686	1.0733	SCYA2
3909 9 at 4 636	X97064	0.003096	0.00103	0.003207	-0.19906	SEC23A
4157 3 at 4 637	X68560	0.003096	0.00103	0.007856	0.437567	SP3
3778 9 at 4 638	AF064094	0.003096	0.00103	0.000287	-0.19385	TADA2L
4161 2 at 4 639	AB007872	0.003096	0.00103	0.000119	-0.20778	ZNF264
4098 4 at 4 640	W28255	0.013622	0.001698	0.001407	-0.24426	76P
3870 4 at 4	AB007934	0.003096	0.001698	0.003182	-0.24405	ACF7

## ANNOTATED MARKED-UP SPECIFICATION

641						
3479 2 at 1						
642	AL049954	0.013622	0.001698	0.024193	-0.25818	AHCYL1
3876 0 f at 164						
3	U90546	0.003096	0.001698	0.000105	-0.34074	BTN3A2
3871 2 at 1						
644	AL035291	0.013622	0.001698	0.007668	0.506107	CHI
3534 9 at 1						
645	AF031647	0.013622	0.001698	0.004755	0.257244	COPS3
3237 0 at 1						
646	M57888	0.003096	0.001698	0.004549	-0.64384	CTLA1
4009 7 at 1						
647	AF000987	0.003096	0.001698	0.009455	0.247586	EIF1AY
4025 0 at 1						
648	U55766	0.003096	0.001698	0.00066	0.795017	HRB2
2061 at 16						
49	L12002	0.013622	0.001698	0.005765	-0.1942	ITGA4
4163 5 at 1						
650	D14661	0.013622	0.001698	0.011324	0.391267	KIAA0105
4084 4 at 1						
651	D63875	0.013622	0.001698	0.002192	-0.36411	KIAA0155
3478 6 at 1						
652	AB018285	0.013622	0.001698	0.001545	0.550994	KIAA0742
3721 6 at 1						
653	AB023180	0.013622	0.001698	0.001642	0.253479	KIAA0963
3217 1 at 1						
654	AL080102	0.013622	0.001698	0.003651	0.435751	KIAA1856
3997 1 at 1						
655	M22637	0.013622	0.001698	0.003792	-0.27794	LYL1
1764 s at 1						
656	D85131	0.013622	0.001698	0.005126	-0.12291	MAZ
1761 at 16						
57	D37965	0.013622	0.001698	0.01111	-0.09143	PDGFRL
3936 4 s at 165						
8	Y18207	0.003096	0.001698	0.003474	-0.17238	PPP1R3C
1571	L49229	0.013622	0.001698	0.000336	-0.36639	RB1

## ANNOTATED MARKED-UP SPECIFICATION

<u>f at</u> <u>1659</u>						
4104 0 at 660	U77664	0.013622	0.001698	0.002354	0.193666	RPP38
4180 7 at 661	AL040137	0.003096	0.001698	0.008384	-0.23366	SAP18
3765 4 at 662	D31764	0.013622	0.001698	0.01295	-0.13299	SNX17
4107 1 at 663	X57655	0.013622	0.001698	0.002476	-0.17382	SPINK2
3679 0 at 664	M19267	0.013622	0.001698	0.013582	0.262886	TPM1
1106 s at 1665	M12959	0.013622	0.001698	0.003907	-0.08942	TRA@
3384 4 at 666	AA160724	0.013622	0.001698	0.005695	0.267002	
3310 3 s at 1667	U37122	0.003096	0.002135	0.000571	-0.59281	ADD3
3855 4 at 668	AA903720	0.003096	0.002135	0.002557	0.244618	BAP29
3721 1 at 669	M93107	0.003096	0.002135	0.00187	-0.19146	BDH
4169 4 at 670	M17754	0.003096	0.002135	0.010333	-0.10769	BN51T
3480 2 at 671	X15882	0.003096	0.002135	0.0023	0.227769	COL6A2
3841 3 at 672	D15057	0.003096	0.002135	0.002814	-0.26776	DAD1
3942 0 at 673	S62138	0.003096	0.002135	0.002442	1.1158	DDIT3
3855 5 at 674	AB026436	0.003096	0.002135	0.011189	0.711919	DUSP10
3822 6 at 675	W27152	0.003096	0.002135	0.009498	-0.1614	FLJ10569
763 at 1676	AB001106	0.003096	0.002135	0.002408	0.444617	GMFB
3432	D87120	0.003096	0.002135	0.00475	0.236706	GS3786

## ANNOTATED MARKED-UP SPECIFICATION

2 r at+67 7						
3415 7 f at+67 8	AI200373	0.003096	0.002135	0.003822	-0.31066	H2AFI
4160 9 at+ 679	U15085	0.003096	0.002135	0.011743	0.328857	HLA-DMB
3573 7 at+ 680	U90549	0.003096	0.002135	0.001654	-0.26437	HMG17L3
4105 8 g at+68 +	AI760162	0.003096	0.002135	0.001313	-0.47775	HT012
3483 2 s at+68 2	AB018306	0.003096	0.002135	0.000371	0.316202	KIAA0763
3901 9 at+ 683	D14696	0.003096	0.002135	0.016949	0.259239	LAPTM4A
3323 8 at+ 684	U23852	0.003096	0.002135	0.001207	-0.2593	LCK
4013 8 at+ 685	U70735	0.003096	0.002135	0.0002	-0.20846	MOV34-34KD
3981 2 at+ 686	X79865	0.003096	0.002135	0.0141	0.418466	MRPL12
3908 1 at+ 687	AI547258	0.003096	0.002135	0.001223	0.267951	MT2A
269 at+68 8	L40387	0.003096	0.002135	0.00038	0.211973	OASL
3437 6 at+ 689	AB019517	0.003096	0.002135	0.023004	0.219453	PKIG
4121 4 at+ 690	M58459	0.003096	0.002135	0.001362	1.46854	RPS4Y
3332 2 i a t+69 +	X57348	0.003096	0.002135	0.004255	0.22047	SFN
3276 7 at+ 692	M74558	0.003096	0.002135	0.001205	0.219185	SIL
3938 7 at+ 693	U34044	0.003096	0.002135	0.000831	-0.21289	SPS



## ANNOTATED MARKED-UP SPECIFICATION

3563 4 at 1 694	U49928	0.003096	0.002135	0.000886	-0.31189	TAB1
1634 s at 1 1695	X05839	0.003096	0.002135	0.008747	0.214552	TGFB1
3746 0 at 1 696	U16296	0.003096	0.002135	0.006585	-0.14857	TIAM1
4144 3 at 1 697	U63127	0.003096	0.002135	0.000538	-0.38925	TIC
3154 0 at 1 698	U03397	0.003096	0.002135	0.005156	-0.34157	TNFRSF9
1110 at 1 99	M21624	0.003096	0.002135	0.001748	-0.51878	TRD@
3617 0 at 1 700	D83198	0.003096	0.002135	0.028975	-0.17519	YF13H12
303 at 1 701	HG960- HT960	0.003096	0.002135	0.003089	0.145701	
918 at 1 702	HG4724- HT5166	0.003096	0.002135	0.002446	-0.25728	
1197 at 1 703	D00654	0.003096	0.004342	9.79E-05	-0.1819	ACTG2
4078 9 at 1 704	U54645	0.013622	0.004342	0.004228	-0.25281	AK2
3267 6 at 1 705	M93405	0.003096	0.004342	0.020651	0.126156	ALDH6A1
3379 6 at 1 706	U73960	0.003096	0.004342	0.002279	0.555806	ARL4
2000 at 1 707	U26455	0.003096	0.004342	0.006562	-0.53911	ATM
3383 8 at 1 708	M33519	0.003096	0.004342	0.011169	-0.33327	BAT3
4054 8 at 1 709	U90028	0.003096	0.004342	0.000396	-0.24971	BICD1
3711 2 at 1 710	AB002384	0.003096	0.004342	0.002855	-0.46941	C6orf32
4106 0 at 1 711	M74093	0.003096	0.004342	0.000763	-0.33022	CCNE1
4182	AA203246	0.003096	0.004342	0.007014	-0.16607	CDC2L5

## ANNOTATED MARKED-UP SPECIFICATION

<u>1 at 712</u>						
<u>795 s at 713</u>	X66358	0.013622	0.004342	0.007122	-0.1886	CDKL1
<u>3730 2 at 714</u>	U30872	0.003096	0.004342	0.001715	-0.164	CENPF
<u>3715 5 at 715</u>	AB020675	0.013622	0.004342	0.002913	-0.25056	CNTNAP2
<u>1400 at 716</u>	M13207	0.013622	0.004342	0.01388	0.122241	CSF2
<u>3434 0 at 717</u>	AA173896	0.013622	0.004342	0.008401	0.305133	CYB5-M
<u>3549 0 at 718</u>	L78267	0.003096	0.004342	0.04708	0.103949	D15S226E
<u>3607 8 at 719</u>	AL080120	0.013622	0.004342	0.001834	-0.12922	DKFZP564O0423
<u>4006 5 s at 720</u>	U13896	0.013622	0.004342	0.020482	-0.10291	DLG1
<u>3151 4 at 721</u>	AF034970	0.013622	0.004342	0.010371	-0.10568	DOK2
<u>1306 at 722</u>	D12686	0.013622	0.004342	0.003493	0.170378	EIF4G1
<u>3225 9 at 723</u>	AB002386	0.003096	0.004342	0.000131	-0.39255	EZH1
<u>3496 0 g at 724</u>	M15059	0.003096	0.004342	0.002497	0.2061	FCER2
<u>3836 2 at 725</u>	W27545	0.013622	0.004342	0.004445	0.379682	FLJ20259
<u>3782 5 at 726</u>	M84443	0.003096	0.004342	0.000101	-0.27085	GALK2
<u>3862 8 at 727</u>	AF029777	0.013622	0.004342	0.001427	-0.22426	GCN5L2
<u>3795 9 at 728</u>	D63876	0.013622	0.004342	0.002737	0.396946	GGA3
<u>3471 9 at 729</u>	AB020645	0.003096	0.004342	0.003907	-0.37377	GLS

## ANNOTATED MARKED-UP SPECIFICATION

466 at 173 0	U77948	0.003096	0.004342	0.000818	-0.35677	GTF2I
4077 8 at 173 734	AF035555	0.003096	0.004342	0.018388	-0.17666	HADH2
3973 3 at 173 732	AF055001	0.003096	0.004342	0.010744	0.724714	HERPUD1
4123 7 at 173 733	D32129	0.003096	0.004342	0.005364	-0.13287	HLA-A
3146 0 f at 173 4	AF043586	0.003096	0.004342	0.001047	-0.30021	IGL@
3641 2 s at 173 5	U53831	0.013622	0.004342	0.01853	0.488267	IRF7
4138 7 r at 173 6	AB002344	0.003096	0.004342	0.001658	0.705775	KIAA0346
4022 2 s at 173 7	AI677689	0.013622	0.004342	0.004375	-0.1411	KIAA0685
4143 1 at 173 738	AB023153	0.003096	0.004342	0.04282	-0.39134	KIAA0936
3891 9 at 173 739	AB023226	0.003096	0.004342	0.000111	-0.71413	KIAA1009
4067 0 at 173 740	AI148772	0.013622	0.004342	0.03739	0.532454	KYNU
3536 7 at 173 741	AB006780	0.003096	0.004342	0.010236	0.178362	LGALS3
3652 7 at 173 742	AL050405	0.003096	0.004342	0.008144	0.311843	LOC51634
1671 s at 173 743	L35253	0.013622	0.004342	0.001324	-0.46397	MAPK14
3959 4 f at 173 744	R93527	0.013622	0.004342	0.000372	0.264207	MT1H
4163 7 at 173 745	AF108145	0.003096	0.004342	0.001206	-0.14877	MYLE
3218 8 at 173 746	M96980	0.013622	0.004342	0.002106	-0.16409	MYT1

## ANNOTATED MARKED-UP SPECIFICATION

545 g at 1 747	S76638	0.013622	0.004342	0.04529	0.171344	NFKB2
3336 7 s at 174 8	D88674	0.013622	0.004342	0.045232	0.346415	OAZIN
3696 8 s at 174 9	AL050353	0.013622	0.004342	0.016071	-0.11979	OIP2
4044 0 at 1 750	AL080119	0.003096	0.004342	0.001961	-0.40821	PAI-RBP1
3485 5 at 1 751	X76770	0.013622	0.004342	0.005011	-0.10613	PAPOLA
3999 3 at 1 752	D11466	0.003096	0.004342	0.009752	0.738127	PIGA
3536 1 at 1 753	W28299	0.003096	0.004342	0.001225	-0.17755	PINK1
3702 8 at 1 754	U83981	0.003096	0.004342	0.014327	0.28747	PPP1R15A
116 at 175 5	X14968	0.013622	0.004342	0.004727	0.105215	PRKAR2A
1267 at 17 56	M55284	0.003096	0.004342	0.003435	-0.17401	PRKCH
3575 2 s at 175 7	M15036	0.003096	0.004342	0.010965	-0.25119	PROS1
4051 9 at 1 758	Y00638	0.003096	0.004342	0.004977	-0.30956	PTPRC
3620 4 at 1 759	Y00815	0.003096	0.004342	0.015344	0.116938	PTPRF
1587 at 17 60	M38258	0.003096	0.004342	0.009252	-0.14193	RARG
3520 2 at 1 761	AF025654	0.003096	0.004342	0.002302	-0.39122	RNGTT
3794 6 at 1 762	M60724	0.013622	0.004342	0.004732	-0.22065	RPS6KB1
4046 7 at 1 763	AB006202	0.013622	0.004342	0.003028	-0.18268	SDHD
4159	AA890010	0.003096	0.004342	0.00546	-0.21285	SEC22L1

## ANNOTATED MARKED-UP SPECIFICATION

8 at 764						
41352 at 765	X62822	0.003096	0.004342	0.039707	-0.21593	SIAT1
33649 at 766	L41680	0.003096	0.004342	0.001771	-0.16486	SIAT8D
1866g at 767	X15217	0.003096	0.004342	0.007377	0.149306	SKIL
33260 at 768	L13857	0.003096	0.004342	0.005721	-0.11073	SOS1
1031at 769	U09564	0.003096	0.004342	0.001203	-0.27717	SRPK1
39246 at 770	Z75330	0.013622	0.004342	0.031796	-0.11359	STAG1
37278 at 771	X92762	0.003096	0.004342	0.001021	-0.27946	TAZ
31742 at 772	AF064090	0.003096	0.004342	0.006206	0.303013	TNFSF14
471f at 773	U47634	0.003096	0.004342	0.0057	0.278205	TUBB4
33490 at 774	L27071	0.003096	0.004342	0.000732	-0.39906	TXK
1423at 775	D78514	0.003096	0.004342	0.000681	-0.2599	UBE2G1
36378 at 776	AF085807	0.003096	0.004342	0.005801	0.124457	UPK1A
32086 at 777	U66561	0.003096	0.004342	0.002542	0.448044	ZNF184
34544 at 778	X78925	0.013622	0.004342	0.001898	0.351929	ZNF267
1921at 779	HG2510-HT2606	0.013622	0.004342	0.007016	0.179499	
36564 at 780	W27419	0.003096	0.004342	0.006325	0.341787	
37842 at 781	AF054589	0.003096	0.004342	0.030568	-0.50762	
39103 s	H98552	0.003096	0.004342	0.017185	-0.1057	

## ANNOTATED MARKED-UP SPECIFICATION

at178 2						
4019 4 at1 783	AI056697	0.003096	0.004342	0.000329	-0.20147	
AFF X- HSA C07/ X003 51 M st 1784	X00351	0.003096	0.005207	0.001506	-0.12928	ACTB
3573 3 at1 785	AF006082	0.003096	0.005207	0.002797	-0.34587	ACTR2
3922 5 at1 786	Y09443	0.003096	0.005207	0.002286	-0.17646	AGPS
3399 1 g at178 7	U22961	0.003096	0.005207	0.003092	0.147932	ALB
3617 2 s at178 8	AF002163	0.003096	0.005207	0.002447	-0.37588	AP3D1
3621 1 at1 789	D87461	0.003096	0.005207	0.004809	-0.26338	BCL2L2
3734 5 at1 790	AF013759	0.003096	0.005207	0.004946	-0.18574	CALU
1273 r at 1794	L22005	0.003096	0.005207	0.006442	0.131869	CDC34
3467 3 r at179 2	AL109689	0.003096	0.005207	0.013291	-0.24945	CGI-142
3470 7 at1 793	U91543	0.003096	0.005207	0.014143	-0.25258	CHD3
3846 6 at1 794	X82153	0.003096	0.005207	0.013882	-0.31742	CTSK
3677 7 at1 795	AJ001687	0.003096	0.005207	0.000224	-0.64837	D12S2489E
3183 5 at1 796	M13149	0.003096	0.005207	0.008717	-0.13824	HRG
3767 9 at1 797	Y10313	0.003096	0.005207	0.006846	0.464769	IFRD1

## ANNOTATED MARKED-UP SPECIFICATION

<del>3328</del> <del>1 at 1</del> <del>798</del>	D63485	0.003096	0.005207	0.000985	-0.31599	IKKE
<del>3889</del> <del>2 at 1</del> <del>799</del>	D87077	0.003096	0.005207	0.043072	-0.21138	KIAA0240
<del>3714</del> <del>6 at 1</del> <del>800</del>	AB007864	0.003096	0.005207	0.001569	0.256672	KIAA0404
<del>1439</del> <del>s at 1</del> <del>1801</del>	X75346	0.003096	0.005207	0.001841	0.331699	MAPKAPK2
<del>654</del> <del>at 180</del> <del>2</del>	L07648	0.003096	0.005207	0.010594	0.226817	MXI1
<del>4034</del> <del>4 at 1</del> <del>803</del>	AB028993	0.003096	0.005207	0.0247	0.133216	NLGN1
<del>3943</del> <del>5 at 1</del> <del>804</del>	D45333	0.003096	0.005207	0.002104	0.302454	PFDN1
<del>1094</del> <del>g at 1</del> <del>1805</del>	M65254	0.003096	0.005207	0.002619	0.262897	PPP2R1B
<del>3326</del> <del>5 at 1</del> <del>806</del>	M86852	0.003096	0.005207	0.004274	0.172251	PXMP3
<del>967</del> <del>g at 1</del> <del>807</del>	X97795	0.003096	0.005207	0.021131	-0.18349	RAD54L
<del>3243</del> <del>7 at 1</del> <del>808</del>	U14970	0.003096	0.005207	0.001894	-0.1353	RPS5
<del>3691</del> <del>6 at 1</del> <del>809</del>	X74570	0.003096	0.005207	0.00345	0.210049	SIAT4C
<del>3953</del> <del>7 at 1</del> <del>810</del>	X98248	0.003096	0.005207	0.010403	-0.50617	SORT1
<del>1640</del> <del>at 18</del> <del>11</del>	U17714	0.003096	0.005207	0.002081	-0.19372	ST13
<del>3398</del> <del>9 f at 18</del> <del>12</del>	W28869	0.003096	0.005207	0.001369	-0.38498	TEGT
<del>3231</del> <del>4 g at 18</del> <del>13</del>	M12125	0.003096	0.005207	0.000178	-0.09929	TPM2
<del>1600</del> <del>at 18</del> <del>14</del>	L27071	0.003096	0.005207	0.003834	-0.36074	TXK
<del>1947</del> <del>g at 1</del>	M60614	0.003096	0.005207	0.001757	-0.25283	WIT-1

## ANNOTATED MARKED-UP SPECIFICATION

1815						
1515 at 1816	HG4074- HT4344	0.003096	0.005207	0.004175	0.589048	
3689 4 at 1817	AL031846	0.003096	0.005207	0.004012	-0.42132	
956 at 1818	HG1980- HT2023	0.003096	0.005207	0.002314	0.711234	
3438 4 at 1819	AF022853	0.047678	0.006683	0.002056	-0.30792	ABCC1
4165 4 at 1820	X02994	0.047678	0.006683	0.036598	-0.12393	ADA
3754 3 at 1821	D25304	0.047678	0.006683	0.002258	-0.44746	ARHGEF6
3979 0 at 1822	M23115	0.047678	0.006683	0.016518	-0.1243	ATP2A2
3754 9 g at 1823	U87408	0.047678	0.006683	0.008628	-0.33961	B1
3260 6 at 1824	AA135683	0.047678	0.006683	0.010045	0.6329	BASP1
3131 4 at 1825	M22491	0.047678	0.006683	0.020141	-0.10386	BMP3
1096 g at 1826	M28170	0.047678	0.006683	0.014303	0.280093	CD19
4073 8 at 1827	M16336	0.047678	0.006683	0.011755	-0.19993	CD2
1942 s at 1828	U37022	0.047678	0.006683	0.028135	-0.06885	CDK4
450 g at 1829	U66469	0.047678	0.006683	0.004123	0.616896	CGR19
3984 0 at 1830	AI037867	0.047678	0.006683	0.009634	-0.11973	CKTSF1B1
3149 3 s at 1831	J03071	0.047678	0.006683	0.011153	-0.23776	CSH2
594 s at 1832	M55265	0.047678	0.006683	0.01278	-0.1479	CSNK2A1
1492	M33317	0.047678	0.006683	0.014832	-0.17753	CYP2A7



## ANNOTATED MARKED-UP SPECIFICATION

<u>f at</u> <u>1833</u>						
500 <u>at</u> <u>183</u> 4	U37143	0.013622	0.006683	0.001908	0.171138	CYP2J2
3786 <u>0 at</u> <u>835</u>	AL049942	0.013622	0.006683	0.00076	-0.20245	DKFZP564F1422
4101 <u>8 at</u> <u>836</u>	AL050015	0.013622	0.006683	0.008524	-0.13959	DKFZP564O243
4112 <u>4 r</u> <u>at</u> <u>183</u> 7	L35594	0.013622	0.006683	0.002806	0.216985	ENPP2
3234 <u>3 at</u> <u>838</u>	J03796	0.047678	0.006683	0.002596	-0.28198	EPB41
3599 <u>4 at</u> <u>839</u>	AC002398	0.013622	0.006683	0.003226	-0.27062	F25965
3676 <u>2 at</u> <u>840</u>	X15376	0.013622	0.006683	0.014388	-0.15607	GABRG2
3185 <u>0 at</u> <u>841</u>	M90656	0.047678	0.006683	0.006961	-0.15968	GCLC
4107 <u>4 at</u> <u>842</u>	AF062006	0.013622	0.006683	0.001442	0.200117	GPR49
416 <u>s at</u> <u>843</u>	X61755	0.013622	0.006683	0.000491	-0.19331	HOXC5
3476 <u>4 at</u> <u>844</u>	D21851	0.047678	0.006683	0.017915	0.153927	KIAA0028
3636 <u>0 at</u> <u>845</u>	AB007976	0.047678	0.006683	0.032427	0.228873	KIAA0507
4111 <u>3 at</u> <u>846</u>	AI871396	0.047678	0.006683	0.001957	-0.48312	KIAA0557
3992 <u>4 at</u> <u>847</u>	AB020660	0.047678	0.006683	0.001858	-0.27616	KIAA0853
3673 <u>5 f</u> <u>at</u> <u>184</u> 8	X93595	0.047678	0.006683	0.026214	0.245064	KIR3DL2
3211 <u>6 at</u> <u>849</u>	AB002405	0.047678	0.006683	0.003681	-0.19481	LAK-4P
3861 <u>1 at</u> <u>850</u>	X07228	0.047678	0.006683	0.046458	0.113484	LIPC

## ANNOTATED MARKED-UP SPECIFICATION

<del>3445</del> <del>9 at 1</del> <del>851</del>	U50529	0.047678	0.006683	0.001977	0.310499	LOC88523
<del>3863</del> <del>9 at 1</del> <del>852</del>	AF040963	0.047678	0.006683	0.012629	0.148739	MAD4
<del>1325</del> <del>at 18</del> <del>53</del>	U59423	0.047678	0.006683	0.01126	-0.1341	MADH1
<del>4082</del> <del>3 s</del> <del>at 185</del> <del>4</del>	U85430	0.013622	0.006683	0.000224	-0.41454	NFATC3
<del>3913</del> <del>7 at 1</del> <del>855</del>	X80878	0.047678	0.006683	0.010021	-0.16096	NFRKB
<del>337</del> <del>at 185</del> <del>6</del>	AF005043	0.013622	0.006683	0.00078	-0.15296	PARG
<del>3197</del> <del>9 at 1</del> <del>857</del>	D49818	0.047678	0.006683	0.021976	-0.10631	PFKFB4
<del>3290</del> <del>4 at 1</del> <del>858</del>	M28393	0.013622	0.006683	0.003241	-0.16419	PRF1
<del>4051</del> <del>8 at 1</del> <del>859</del>	Y00062	0.047678	0.006683	0.011868	-0.2415	PTPRC
<del>4081</del> <del>6 at 1</del> <del>860</del>	L07758	0.047678	0.006683	0.008943	0.201883	PWP1
<del>809</del> <del>at 186</del> <del>1</del>	U57094	0.047678	0.006683	0.014944	-0.31108	RAB27A
<del>228</del> <del>at 186</del> <del>2</del>	M35416	0.013622	0.006683	0.002789	-0.41233	RALB
<del>4157</del> <del>2 r</del> <del>at 186</del> <del>3</del>	X75042	0.047678	0.006683	0.003614	0.659166	REL
<del>4045</del> <del>7 at 1</del> <del>864</del>	AF038250	0.047678	0.006683	0.004198	0.395171	SFRS3
<del>3749</del> <del>0 at 1</del> <del>865</del>	L27213	0.013622	0.006683	0.001014	-0.13065	SLC4A3
<del>3217</del> <del>9 s</del> <del>at 186</del> <del>6</del>	Y09568	0.047678	0.006683	0.005799	-0.3407	SNAP23
<del>4015</del> <del>0 at 1</del> <del>867</del>	AA205857	0.013622	0.006683	0.00048	0.27495	SNRPD3
<del>1029</del>	U07794	0.047678	0.006683	0.007632	-0.20733	TXK

## ANNOTATED MARKED-UP SPECIFICATION

<u>s at</u> <u>1868</u>						
<u>4137</u> <u>7 f</u> <u>at186</u> <u>9</u>	J05428	0.013622	0.006683	0.00573	-0.08342	UGT2B7
<u>4171</u> <u>3 at1</u> <u>870</u>	U09848	0.047678	0.006683	0.011538	-0.26846	ZNF36
<u>3664</u> <u>2 at1</u> <u>871</u>	J00287	0.047678	0.006683	0.000953	-0.28381	
<u>3938</u> <u>3 at1</u> <u>872</u>	AB007882	0.013622	0.009369	0.006034	-0.17275	ADCY6
<u>3226</u> <u>1 at1</u> <u>873</u>	AF072810	0.013622	0.009369	0.016137	-0.32509	BAZ1B
<u>4079</u> <u>0 at1</u> <u>874</u>	AB004066	0.013622	0.009369	0.00789	0.494455	BHLHB2
<u>3657</u> <u>8 at1</u> <u>875</u>	U37547	0.013622	0.009369	0.00478	0.544595	BIRC2
<u>3910</u> <u>9 at1</u> <u>876</u>	AB024704	0.013622	0.009369	0.010893	-0.11914	C20orf1
<u>3217</u> <u>7 s</u> <u>at187</u> <u>7</u>	AC004084	0.013622	0.009369	0.005491	-0.17437	CAPRI
<u>3150</u> <u>6 s</u> <u>at187</u> <u>8</u>	L12691	0.013622	0.009369	0.018291	-0.18848	DEFA3
<u>1272</u> <u>at18</u> <u>79</u>	L19161	0.013622	0.009369	0.001645	-0.27253	EIF2S3
<u>4006</u> <u>7 at1</u> <u>880</u>	M82882	0.013622	0.009369	0.003966	0.478256	ELF1
<u>3731</u> <u>8 at1</u> <u>881</u>	X81625	0.013622	0.009369	0.003918	0.762544	ETF1
<u>3495</u> <u>9 at1</u> <u>882</u>	M15059	0.013622	0.009369	0.035106	0.313247	FCER2
<u>4077</u> <u>2 at1</u> <u>883</u>	AA284298	0.013622	0.009369	0.028745	-0.12535	FLJ22269
<u>3724</u> <u>5 at1</u> <u>884</u>	U13044	0.013622	0.009369	0.017986	-0.32813	GABPA
<u>3626</u> <u>2 at1</u>	Z12173	0.013622	0.009369	0.001297	-0.32703	GNS

## ANNOTATED MARKED-UP SPECIFICATION

885						
3982 3 at 4						
886	U06631	0.013622	0.009369	0.003506	-0.37935	H326
3866 1 at 4						
887	X75315	0.013622	0.009369	0.002959	1.06191	HSRNASEB
4177 5 at 4						
888	AF064084	0.013622	0.009369	0.017927	-0.10308	ICMT
3803 0 at 4						
889	AB002330	0.013622	0.009369	0.048512	-0.09076	KIAA0332
4178 8 i a t 189 0						
	AB014569	0.013622	0.009369	0.010011	0.709572	KIAA0669
3475 1 at 4						
891	AI970189	0.013622	0.009369	0.001778	0.569801	KIAA0997
4082 9 at 4						
892	AB028960	0.013622	0.009369	0.001825	-0.15403	KIAA1037
3777 8 at 4						
893	AJ005273	0.013622	0.009369	0.001449	0.379277	KIN
3285 5 at 4						
894	L00352	0.013622	0.009369	0.004231	0.554465	LDLR
3344 7 at 4						
895	X54304	0.013622	0.009369	0.000863	-0.19567	MLCB
4062 6 at 4						
896	AI693193	0.013622	0.009369	0.023978	-0.25831	MTX1
3300 2 at 4						
897	AF047487	0.013622	0.009369	0.001312	-0.33746	NCK2
4012 2 at 4						
898	AF037448	0.013622	0.009369	0.00743	0.204106	NSAP1
4120 2 s at 189 9						
	AF000152	0.013622	0.009369	0.025216	-0.34592	OS4
3852 6 at 4						
900	U02882	0.013622	0.009369	0.017536	0.892321	PDE4D
392 g at 4						
901	X89416	0.013622	0.009369	0.005129	-0.1405	PPP5C
1043 s at 4						
1902	U27516	0.013622	0.009369	0.004164	-0.17553	RAD52
3348	D23660	0.013622	0.009369	0.01215	0.149327	RPL4

## ANNOTATED MARKED-UP SPECIFICATION

5 at 903						
3342 1 s at 904	AB016247	0.013622	0.009369	0.019879	0.416634	SC5DL
3548 8 at 905	U44754	0.013622	0.009369	0.005273	0.158396	SNAPC1
4187 1 at 906	AI660929	0.013622	0.009369	0.000698	-0.15764	T1A-2
3732 4 at 907	X01060	0.013622	0.009369	0.005079	0.27369	TFRC
3380 3 at 908	J02973	0.013622	0.009369	0.006825	0.835338	THBD
1729 at 909	L41690	0.013622	0.009369	0.020209	-0.32814	TRADD
3912 3 s at 910	X89066	0.013622	0.009369	0.000396	-0.2226	TRPC1
3440 2 at 911	AB024327	0.013622	0.009369	0.031	0.260875	UNRIP
3400 1 at 912	AF033199	0.013622	0.009369	0.02842	-0.1806	ZNF204
3921 8 at 913	AL080123	0.013622	0.009369	0.018447	0.215445	ZNF23
3976 2 at 914	AB007885	0.013622	0.009369	0.025803	-0.22701	ZNF262
834 at 915	U40462	0.013622	0.009369	0.004101	-0.29722	ZNFN1A1
1146 at 916	HG3477- HT3670	0.013622	0.009369	0.00042	-0.2367	
253 g at 917	L42324	0.013622	0.009369	0.015195	0.283048	GPR18
3173 6 at 918	AA975427	0.013622	0.009369	0.002377	-0.26992	
3917 0 at 919	AL049957	0.013622	0.009369	0.007809	0.133451	
4072 0 at 920	AL022398	0.013622	0.009369	0.017529	-0.48579	

## ANNOTATED MARKED-UP SPECIFICATION

694 at 1924	HG2689- HT2785	0.013622	0.009369	0.029818	0.202486	
4156 5 at 1922	AF034373	0.013622	0.014679	0.00591	-0.26511	A2LP
3703 8 at 1923	X83467	0.013622	0.014679	0.006111	-0.25837	ABCD3
3476 1 r at 1924	U41766	0.047678	0.014679	0.014363	0.473526	ADAM9
3310 2 at 1925	D67031	0.013622	0.014679	0.007826	-0.4645	ADD3
3825 3 at 1926	U84011	0.013622	0.014679	0.012995	-0.2499	AGL
1912 s at 1927	M74088	0.013622	0.014679	0.038601	-0.16952	APC
1863 s at 1928	U67092	0.047678	0.014679	0.047381	-0.10935	ATM
3866 3 at 1929	AI033692	0.047678	0.014679	0.010056	-0.2417	BCRP1
394 at 1930	X92106	0.013622	0.014679	0.001377	-0.33994	BLMH
3956 5 at 1931	Z22535	0.047678	0.014679	0.021613	-0.09832	BMPR1A
3874 0 at 1932	X79067	0.047678	0.014679	0.0381	0.14954	BRF1
3386 4 at 1933	X86098	0.013622	0.014679	0.000807	-0.34829	BS69
3663 4 at 1934	U72649	0.047678	0.014679	0.029157	0.227444	BTG2
3978 2 at 1935	X95592	0.047678	0.014679	0.014127	0.201273	C1D
3203 1 at 1936	D78586	0.047678	0.014679	0.028845	-0.05709	CAD
1421 at 1937	D30742	0.047678	0.014679	0.028215	0.180381	CAMK4
3185 4 at 1938	AF035582	0.047678	0.014679	0.002042	0.530946	CASK

## ANNOTATED MARKED-UP SPECIFICATION

487 g at 1 939	U60521	0.047678	0.014679	0.002353	0.552837	CASP9
3700 9 at 1 940	AL035079	0.013622	0.014679	0.00063	-0.78567	CAT
3956 2 at 1 941	AF094481	0.047678	0.014679	0.024569	0.149973	CGGBP1
3420 0 at 1 942	X83378	0.013622	0.014679	0.025603	0.133485	CLCN6
3608 0 at 1 943	AB002332	0.047678	0.014679	0.003136	-0.20009	CLOCK
3976 8 at 1 944	D13146	0.013622	0.014679	0.017967	-0.13385	CNP
3595 5 at 1 945	S80864	0.013622	0.014679	0.011106	-0.33164	CYCL
3798 1 at 1 946	D17530	0.047678	0.014679	0.005519	-0.15234	DBN1
3918 2 at 1 947	U87947	0.047678	0.014679	0.011279	0.222382	EMP3
3798 6 at 1 948	M60459	0.047678	0.014679	0.010174	-0.10156	EPOR
3273 1 at 1 949	AB018247	0.013622	0.014679	0.000348	0.423577	FE65L2
3218 7 at 1 950	AB028973	0.013622	0.014679	0.046458	-0.12088	FLJ10883
4140 6 at 1 951	AL080172	0.047678	0.014679	0.02693	-0.063	FLJ21919
3474 0 at 1 952	AF032886	0.047678	0.014679	0.009814	0.232307	FOXO3A
3918 1 at 1 953	U00928	0.047678	0.014679	0.01307	-0.0915	FUS
909 g at 1 954	M14660	0.047678	0.014679	0.011038	0.732462	FUT10
3648 4 at 1 955	AI935146	0.047678	0.014679	0.044653	0.246267	GALNT3
3770 6 at 1 956	U28811	0.047678	0.014679	0.007572	-0.21558	GLG1
3543	AF001903	0.013622	0.014679	0.001957	-0.28636	HADHSC

## ANNOTATED MARKED-UP SPECIFICATION

<u>5 s</u> <u>at+195</u> <u>7</u>						
<u>102</u> <u>at+195</u> <u>8</u>	Y09306	0.047678	0.014679	0.045083	-0.08024	HIPK3
<u>4036</u> <u>9 f</u> <u>at+195</u> <u>9</u>	AL022723	0.047678	0.014679	0.041021	0.165267	HLA-G
<u>3501</u> <u>7 f</u> <u>at+196</u> <u>0</u>	M80469	0.013622	0.014679	0.037453	-0.12099	HLA-J
<u>3761</u> <u>8 at+1</u> <u>961</u>	M16937	0.013622	0.014679	0.002262	-0.13536	HOXB7
<u>3154</u> <u>1 at+1</u> <u>962</u>	X98307	0.013622	0.014679	0.011852	-0.0908	HSUR7SEQ
<u>1179</u> <u>at+19</u> <u>63</u>	HG2855- HT2995	0.047678	0.014679	0.030595	0.16813	HSP70
<u>3661</u> <u>4 at+1</u> <u>964</u>	X87949	0.047678	0.014679	0.028569	0.296273	HSPA5
<u>3273</u> <u>6 at+1</u> <u>965</u>	W68830	0.013622	0.014679	0.007971	-0.22855	HSPC022
<u>1185</u> <u>at+19</u> <u>66</u>	D49410	0.047678	0.014679	0.040369	0.153358	HUMIL3RA12
<u>3581</u> <u>5 at+1</u> <u>967</u>	AL049470	0.013622	0.014679	0.010492	0.283688	HYPB
<u>3579</u> <u>7 at+1</u> <u>968</u>	Y10659	0.047678	0.014679	0.024205	-0.1217	IL13RA1
<u>3760</u> <u>3 at+1</u> <u>969</u>	X52015	0.047678	0.014679	0.006637	0.417081	IL1RN
<u>3553</u> <u>9 at+1</u> <u>970</u>	AF047492	0.047678	0.014679	0.002557	0.25738	IMPG1
<u>3350</u> <u>7 g</u> <u>at+197</u> <u>1</u>	U96919	0.013622	0.014679	0.003221	-0.19947	INPP4A
<u>3607</u> <u>4 at+1</u> <u>972</u>	U12897	0.013622	0.014679	0.002496	-0.15016	IPW
<u>4104</u> <u>9 at+1</u> <u>973</u>	S62539	0.013622	0.014679	0.012982	-0.20615	IRS1
<u>3213</u>	AF029778	0.047678	0.014679	0.018006	-0.14486	JAG2



## ANNOTATED MARKED-UP SPECIFICATION

7 at 974						
3336 3 at 975	W25934	0.047678	0.014679	0.016925	0.363279	JTV1
1612 s at 1976	X56681	0.047678	0.014679	0.004935	0.713663	JUND
3819 7 at 977	M64934	0.047678	0.014679	0.003162	-0.1823	KEL
3484 4 at 978	D86975	0.047678	0.014679	0.048475	0.163408	KIAA0222
3198 2 at 979	AB020701	0.013622	0.014679	0.013946	0.283086	KIAA0894
3587 8 at 980	AB023141	0.047678	0.014679	0.017326	-0.33543	KIAA0924
3273 5 at 981	AB023148	0.013622	0.014679	0.016218	-0.27496	KIAA0931
3471 2 at 982	AB023227	0.047678	0.014679	0.043542	0.316063	KIAA1010
3269 3 at 983	AB028963	0.047678	0.014679	0.039194	-0.12296	KIAA1040
3785 7 at 984	AL080188	0.047678	0.014679	0.016745	-0.10387	KIAA1775
3671 7 at 985	AJ224162	0.013622	0.014679	0.002225	-0.24337	LAS
288 s at 986	L25931	0.013622	0.014679	0.00482	-0.2367	LBR
3542 6 at 987	AC004410	0.047678	0.014679	0.017457	0.210096	LOC56928
3181 5 r at 1988	AB009462	0.047678	0.014679	0.012892	0.131673	LRP3
4183 1 at 989	AF077820	0.013622	0.014679	0.003095	-0.40005	LRP5
3844 1 s at 1990	X59408	0.047678	0.014679	0.018321	-0.3029	MCP
3903 7 at 991	L13773	0.013622	0.014679	0.002741	-0.18297	MLLT2

## ANNOTATED MARKED-UP SPECIFICATION

<u>3728</u> <u>3 at1</u> <u>992</u>	X82209	0.047678	0.014679	0.010828	0.178564	MN1
<u>3514</u> <u>5 at1</u> <u>993</u>	X96401	0.013622	0.014679	0.001643	0.317165	MNT
<u>879</u> <u>at199</u> <u>4</u>	M30818	0.047678	0.014679	0.032832	0.292682	MX2
<u>3772</u> <u>4 at1</u> <u>995</u>	V00568	0.013622	0.014679	0.008535	-0.58978	MYC
<u>1904</u> <u>at19</u> <u>96</u>	D50692	0.013622	0.014679	0.043374	-0.20783	MYCBP
<u>3725</u> <u>0 at1</u> <u>997</u>	AB007191	0.013622	0.014679	0.022026	-0.18098	MYCBP
<u>989</u> <u>at199</u> <u>8</u>	X17576	0.013622	0.014679	0.001641	-0.26027	NCK1
<u>4036</u> <u>2 at1</u> <u>999</u>	X61498	0.013622	0.014679	0.006234	0.307667	NFKB2
<u>3916</u> <u>1 at2</u> <u>000</u>	AF052093	0.047678	0.014679	0.001318	-0.31976	NJMU-R1
<u>430</u> <u>at200</u> <u>1</u>	X00737	0.047678	0.014679	0.037385	0.219194	NP
<u>3384</u> <u>9 at2</u> <u>002</u>	U02020	0.047678	0.014679	0.014866	0.650286	PBEF
<u>1223</u> <u>at20</u> <u>03</u>	X66362	0.047678	0.014679	0.006159	0.137944	PCTK3
<u>3836</u> <u>5 at2</u> <u>004</u>	AF026086	0.047678	0.014679	0.006555	-0.18222	PEX1
<u>1275</u> <u>at20</u> <u>05</u>	L25441	0.047678	0.014679	0.011907	0.146471	PGGT1B
<u>4044</u> <u>6 at2</u> <u>006</u>	AL021366	0.013622	0.014679	0.002775	0.425217	PHF1
<u>751</u> <u>at200</u> <u>7</u>	D85418	0.013622	0.014679	0.004449	-0.31688	PIGC
<u>353</u> <u>at200</u> <u>8</u>	D30037	0.047678	0.014679	0.001579	-0.21226	PITPNB
<u>3277</u> <u>5 r</u> <u>at200</u> <u>9</u>	AB006746	0.047678	0.014679	0.0356	0.189986	PLSCR1

## ANNOTATED MARKED-UP SPECIFICATION

3216 7 at2 010	AF054182	0.013622	0.014679	0.002098	-0.54761	PMPCB
857 at201 1	S87759	0.013622	0.014679	0.007522	0.39052	PPM1A
3163 5 g at201 2	M13057	0.047678	0.014679	0.032523	-0.19317	PRH1
3837 1 at2 013	M64992	0.047678	0.014679	0.047326	0.178696	PSMA1
3189 2 at2 014	X58288	0.047678	0.014679	0.002633	0.409542	PTPRM
1753 s at 2015	AD000092	0.047678	0.014679	0.028359	0.137917	RAD23A
3753 0 s at201 6	U79716	0.013622	0.014679	0.003409	0.195389	RELN
4170 5 at2 017	U69198	0.047678	0.014679	0.048001	0.085316	RFNG
4138 4 at2 018	AF117829	0.047678	0.014679	0.003668	0.377251	RIPK2
3334 2 at2 019	AF039029	0.047678	0.014679	0.002146	-0.28622	RNUT1
4127 7 at2 020	AW02154 2	0.013622	0.014679	0.000677	-0.29232	SAP18
4038 5 at2 021	U64197	0.047678	0.014679	0.021124	0.220476	SCYA20
3631 6 r at202 2	AB023136	0.013622	0.014679	0.00288	-0.10963	SEC15B
3759 7 s at202 3	AF055006	0.013622	0.014679	0.011241	0.238955	SEC6
3432 7 at2 024	Z46606	0.047678	0.014679	0.005778	-0.1566	SMARCA3
3326 8 at2 025	L25270	0.047678	0.014679	0.002401	-0.15644	SMCX
3735 3 g at202 6	M60618	0.013622	0.014679	0.006316	0.235838	SP100

## ANNOTATED MARKED-UP SPECIFICATION

<u>3203</u> <u>8 s</u> <u>at202</u> <u>7</u>	AI739308	0.013622	0.014679	0.001861	-0.57419	SRP46
<u>3435</u> <u>6 at2</u> <u>028</u>	U52960	0.047678	0.014679	0.02599	0.429086	SURB7
<u>3755</u> <u>3 at2</u> <u>029</u>	D50863	0.013622	0.014679	0.006582	-0.13005	TESK1
<u>4176</u> <u>2 at2</u> <u>030</u>	D64015	0.013622	0.014679	0.007587	-0.3629	TIAL1
<u>3830</u> <u>3 at2</u> <u>031</u>	AB001523	0.047678	0.014679	0.027565	0.164838	TMEM1
<u>3845</u> <u>7 at2</u> <u>032</u>	L21715	0.013622	0.014679	0.000862	0.309808	TNNI2
<u>3194</u> <u>3 g</u> <u>at203</u> <u>3</u>	AF045583	0.047678	0.014679	0.043887	-0.16757	TULP3
<u>3188</u> <u>2 at2</u> <u>034</u>	AJ001340	0.013622	0.014679	0.002396	-0.17031	U3-55K
<u>3482</u> <u>4 at2</u> <u>035</u>	AB015344	0.013622	0.014679	0.008107	-0.31161	UBQLN2
<u>3665</u> <u>3 g</u> <u>at203</u> <u>6</u>	J03824	0.013622	0.014679	0.005864	-0.18849	UROS
<u>3480</u> <u>3 at2</u> <u>037</u>	AF022789	0.047678	0.014679	0.006582	0.309267	USP12
<u>1926</u> <u>at20</u> <u>38</u>	U48801	0.013622	0.014679	0.003849	-0.17743	VEGFB
<u>1665</u> <u>s at</u> <u>2039</u>	HG544- HT544	0.047678	0.014679	0.010549	0.454218	
<u>3161</u> <u>8 at2</u> <u>040</u>	S66666	0.013622	0.014679	0.003364	-0.14303	
<u>3281</u> <u>5 at2</u> <u>041</u>	AI687419	0.047678	0.014679	0.039394	-0.3657	
<u>3364</u> <u>8 at2</u> <u>042</u>	W28800	0.047678	0.014679	0.004582	0.270831	
<u>3475</u> <u>2 at2</u> <u>043</u>	AL080111	0.013622	0.014679	0.001378	-0.36029	
<u>3493</u>	AF070536	0.047678	0.014679	0.006685	0.199364	

## ANNOTATED MARKED-UP SPECIFICATION

9_r at204 4						
3607 1 at2 045	AF070633	0.047678	0.014679	0.010142	-0.1635	
3636 8 at2 046	AF054998	0.013622	0.014679	0.007913	-0.21157	
701 s at2 047	HG3725- HT3981	0.047678	0.014679	0.027792	-0.11953	
954 s at2 048	HG1614- HT1614	0.013622	0.014679	0.006999	-0.45233	
3938 5 at2 049	M22324	0.013622	0.01669	0.009982	0.283293	ANPEP
3249 0 at2 050	AC005955	0.013622	0.01669	0.004346	0.137324	CEACAM4
3206 6 g at205 4	S68134	0.013622	0.01669	0.005372	1.92718	CREM
3206 7 at2 052	S68271	0.013622	0.01669	0.009154	1.49785	CREM
3983 9 at2 053	M24069	0.013622	0.01669	0.003022	0.249971	CSDA
3835 5 at2 054	AF000984	0.013622	0.01669	0.004295	0.46432	DBY
3557 1 at2 055	AF055917	0.013622	0.01669	0.015434	0.102855	F2RL3
3628 9 f at205 6	U27333	0.013622	0.01669	0.012662	0.136047	FUT6
3270 6 at2 057	X89887	0.013622	0.01669	0.009728	0.152829	HIRA
1568 s at 2058	L42243	0.013622	0.01669	0.002638	0.218644	IFNAR2
3585 0 at2 059	AI950382	0.013622	0.01669	0.00744	0.601631	KIAA0585
3585 1 g at206 0	AI950382	0.013622	0.01669	0.002126	0.519735	KIAA0585
3692	U17760	0.013622	0.01669	0.044392	0.431131	LAMB3

## ANNOTATED MARKED-UP SPECIFICATION

9 at2 061						
3372 0 at2 062	L48692	0.013622	0.01669	0.041233	0.63409	LOC56902
3740 6 at2 063	X94232	0.013622	0.01669	0.016402	0.326694	MAPRE2
4106 3 g at206 4	AA037278	0.013622	0.01669	0.01607	0.119411	MGC10882
280 g at2 065	L13740	0.013622	0.01669	0.007795	0.355688	NR4A1
4065 9 at2 066	U12767	0.013622	0.01669	0.011648	1.30268	NR4A3
4066 1 at2 067	D78579	0.013622	0.01669	0.005896	1.11766	NR4A3
3222 7 at2 068	X17042	0.013622	0.01669	0.015594	0.239796	PRG1
843 at206 9	U48296	0.013622	0.01669	0.003124	0.864101	PTP4A1
570 at207 0	M83221	0.013622	0.01669	0.012321	0.192956	RELB
3804 0 at2 071	AF107463	0.013622	0.01669	0.009662	0.419254	SPF30
904 s at2 072	L47276	0.013622	0.01669	0.004673	0.194449	TOP2A
429 f at2 073	X00734	0.013622	0.01669	0.010039	0.347307	TUBB5
4010 3 at2 074	X51521	0.013622	0.01669	0.010303	0.60161	VIL2
3365 8 at2 075	S54641	0.013622	0.01669	0.008483	0.183207	ZNF124
3841 7 at2 076	M91029	0.013622	0.022759	0.010686	0.450612	AMPD2
3855 0 at2 077	AB021638	0.136189	0.022759	0.024881	-0.1126	APBA3
3687 2 at2 078	AL120559	0.013622	0.022759	0.004505	0.577915	ARPP-19
3260	AF039656	0.013622	0.022759	0.006991	0.68481	BASP1

## ANNOTATED MARKED-UP SPECIFICATION

7 at2 079						
3428 6 at2 080	AB020623	0.047678	0.022759	0.009696	0.418826	BCAS2
4002 3 at2 081	X60201	0.013622	0.022759	0.011758	-0.1576	BDNF
4091 0 at2 082	U56637	0.047678	0.022759	0.008899	-0.28102	CAPZA1
3757 2 at2 083	AW04369 0	0.047678	0.022759	0.031971	0.134862	CCK
3976 7 at2 084	D13627	0.047678	0.022759	0.019298	0.203913	CCT8
806 at208 5	U56998	0.013622	0.022759	0.024403	0.442545	CNK
3282 0 at2 086	U71267	0.047678	0.022759	0.007233	-0.13426	CNOT4
3866 0 at2 087	F27891	0.047678	0.022759	0.02847	0.119514	COX6A2
3657 3 at2 088	U78524	0.013622	0.022759	0.002554	0.353034	DDXBP1
4049 4 at2 089	AF043733	0.047678	0.022759	0.005645	0.22771	DEDD
3899 2 at2 090	X64229	0.013622	0.022759	0.013033	-0.20244	DEK
3415 1 at2 091	AL050284	0.047678	0.022759	0.002819	0.232244	DKFZP586M101 9
4122 6 at2 092	L05147	0.013622	0.022759	0.021168	0.111752	DUSP3
1639 s at 2093	U15642	0.013622	0.022759	0.013339	0.474421	E2F5
4127 5 at2 094	U31556	0.047678	0.022759	0.011303	0.335871	E2F5
3196 5 at2 095	AC004262	0.047678	0.022759	0.004968	-0.25642	EMR2
3597 2 at2 096	AA181196	0.047678	0.022759	0.009459	-0.10534	FLJ11712
3471 5 at2	U74612	0.013622	0.022759	0.014802	-0.18783	FOXMI

## ANNOTATED MARKED-UP SPECIFICATION

097						
3578 5 at2 098	W28281	0.013622	0.022759	0.011042	0.813742	GABARAPL1
3594 2 at2 099	AI183417	0.013622	0.022759	0.011016	0.117979	GABPB1
1598 g at 2100	L13720	0.013622	0.022759	0.014471	-0.1601	GAS6
3513 0 at2 101	X15722	0.013622	0.022759	0.029451	-0.19175	GSR
4137 1 at2 102	Y07595	0.013622	0.022759	0.003113	-0.20996	GTF2H4
3757 4 at2 103	L43821	0.047678	0.022759	0.005863	-0.20401	HEF1
3312 3 at2 104	L10379	0.013622	0.022759	0.02006	-0.15961	HRIHFB2206
3934 8 at2 105	X99209	0.013622	0.022759	0.021333	-0.14942	HRMT1L1
3661 7 at2 106	X77956	0.013622	0.022759	0.009598	0.591031	ID1
3433 3 at2 107	AL021707	0.013622	0.022759	0.004161	1.79061	KIAA0063
3898 4 at2 108	AB007896	0.013622	0.022759	0.006273	-0.41247	KIAA0436
3995 3 i a 1210 9	AB014528	0.047678	0.022759	0.001992	-0.31837	KIAA0628
3240 5 at2 110	AB014607	0.013622	0.022759	0.000764	-0.15753	KIAA0707
3842 4 at2 111	AB018290	0.013622	0.022759	0.034506	-0.28703	KIAA0747
4169 1 at2 112	AB018337	0.013622	0.022759	0.008466	-0.41118	KIAA0794
3708 1 at2 113	AB023161	0.013622	0.022759	0.018461	-0.15095	KIAA0944
4100 1 at2 114	AB023202	0.013622	0.022759	0.005879	-0.19156	KIAA0985
3481 5 at2	U80743	0.013622	0.022759	0.000544	-0.30322	KIAA1498



## ANNOTATED MARKED-UP SPECIFICATION

115						
3382 0 g at211 6	X13794	0.047678	0.022759	0.018671	-0.12764	LDHB
3839 0 at2 117	Z34975	0.013622	0.022759	0.012256	-0.29089	LDLC
4005 9 r at211 8	AI341656	0.047678	0.022759	0.021482	-0.26002	LIM
3563 0 at2 119	X87342	0.013622	0.022759	0.006652	-0.23382	LLGL2
2004 at211 20	U29671	0.047678	0.022759	0.001133	-0.2617	MAP3K1
3477 0 at2 121	Z14138	0.013622	0.022759	0.00408	0.81232	MAP3K8
3533 9 at2 122	AI743606	0.013622	0.022759	0.00269	-0.19764	MEL
3898 7 at2 123	AF052183	0.013622	0.022759	0.002151	-0.19631	MGC2722
3832 5 at2 124	AL050356	0.013622	0.022759	0.002743	-0.42417	MINPP1
4087 8 f at212 5	AF041081	0.013622	0.022759	0.019282	-0.21627	MN7
484 at212 6	U59302	0.013622	0.022759	0.003859	0.280175	NCOA1
3904 0 at2 127	W28360	0.013622	0.022759	0.016633	0.272057	NCUBE1
3263 9 at2 128	U97198	0.013622	0.022759	0.001352	-0.20163	NLP 1
4128 2 s at212 9	AA194159	0.013622	0.022759	0.004614	-0.40044	PEX10
178 f at2 130	U38964	0.013622	0.022759	0.004912	-0.23793	PMS2L8
1875 f at 2131	D38498	0.013622	0.022759	0.003965	-0.58306	PMS2L9
3585 8 at2	AA996066	0.013622	0.022759	0.003514	-0.21994	PMS2L9

## ANNOTATED MARKED-UP SPECIFICATION

<del>132</del>						
<del>3345</del> <del>7 at2</del>						
<del>133</del>	AB029028	0.013622	0.022759	0.027753	-0.29778	RAP140
<del>4026</del> <del>1 at2</del>						
<del>134</del>	AA402524	0.047678	0.022759	0.005359	-0.11564	RBM9
<del>3984</del> <del>1 at2</del>						
<del>135</del>	U79745	0.013622	0.022759	0.00409	0.777629	SLC16A6
<del>3511</del> <del>3 at2</del>						
<del>136</del>	X98332	0.013622	0.022759	0.002282	-0.20078	SLC22A1
<del>3207</del> <del>4 at2</del>						
<del>137</del>	D42045	0.013622	0.022759	0.006867	-0.19726	SNM1
<del>3210</del> <del>8 at2</del>						
<del>138</del>	M76231	0.013622	0.022759	0.009942	0.13899	SPR
<del>4059</del> <del>6 at2</del>						
<del>139</del>	U76366	0.013622	0.022759	0.015416	-0.09378	TCOF1
<del>3268</del> <del>2 at2</del>						
<del>140</del>	U09087	0.013622	0.022759	0.00607	-0.26017	TMPO
<del>3775</del> <del>0 at2</del>						
<del>141</del>	AF049140	0.047678	0.022759	0.011115	-0.21894	UBE2V2
<del>3610</del> <del>2 at2</del>						
<del>142</del>	AF038962	0.047678	0.022759	0.007219	-0.44337	VDAC3
<del>3478</del> <del>1 at2</del>						
<del>143</del>	D84145	0.013622	0.022759	0.002923	0.574155	WS-3
<del>4153</del> <del>2 at2</del>						
<del>144</del>	Y09723	0.047678	0.022759	0.001292	0.234149	ZNF151
<del>3292</del> <del>6 at2</del>						
<del>145</del>	AL049991	0.013622	0.022759	0.007094	0.245237	
<del>3564</del> <del>5 at2</del>						
<del>146</del>	AL050148	0.013622	0.022759	0.013128	-0.26398	
<del>3862</del> <del>3 at2</del>						
<del>147</del>	AI014538	0.013622	0.022759	0.003507	-0.15278	
<del>4017</del> <del>7 at2</del>						
<del>148</del>	AI732885	0.047678	0.022759	0.043886	-0.10293	
<del>AFF</del> <del>X-</del> <del>hum</del> <del>alu</del> <del>at2</del> <del>149</del>						
	U14573	0.013622	0.022759	0.04259	-0.11614	

## ANNOTATED MARKED-UP SPECIFICATION

<u>1700</u> <u>at21</u> <u>50</u>						
	U82987	0.013622	0.024606	0.00343	-0.17272	BBC3
<u>935</u> <u>at215</u> <u>1</u>						
	L12168	0.013622	0.024606	0.007944	-0.22028	CAP
<u>4038</u> <u>2 at2</u> <u>152</u>						
	V00571	0.013622	0.024606	0.005873	0.132015	CRH
<u>4071</u> <u>9 at2</u> <u>153</u>						
	AL022398	0.013622	0.024606	0.015005	-0.44535	DJ434O14.3
<u>3579</u> <u>9 at2</u> <u>154</u>						
	AL080081	0.013622	0.024606	0.007659	0.548836	DNAJB9
<u>4041</u> <u>9 at2</u> <u>155</u>						
	X85116	0.013622	0.024606	0.039531	-0.24601	EPB72
<u>3758</u> <u>4 at2</u> <u>156</u>						
	AJ007669	0.013622	0.024606	0.019404	-0.23162	FANCG
<u>4117</u> <u>7 at2</u> <u>157</u>						
	AW02428 5	0.013622	0.024606	0.007049	0.311562	FLJ12443
<u>3466</u> <u>2 at2</u> <u>158</u>						
	W27666	0.013622	0.024606	0.009544	-0.25685	FLJ14393
<u>4127</u> <u>4 at2</u> <u>159</u>						
	AA908993	0.013622	0.024606	0.015356	-0.12684	FLJ14393
<u>4132</u> <u>3 at2</u> <u>160</u>						
	U90917	0.013622	0.024606	0.016602	-0.23386	FOXMI
<u>3813</u> <u>9 at2</u> <u>161</u>						
	AF017445	0.013622	0.024606	0.025525	-0.33517	FPGT
<u>3651</u> <u>5 at2</u> <u>162</u>						
	AJ238764	0.013622	0.024606	0.030667	0.197763	GNE
<u>3729</u> <u>9 at2</u> <u>163</u>						
	J04501	0.013622	0.024606	0.007821	-0.23523	GYS1
<u>3232</u> <u>1 at2</u> <u>164</u>						
	X56841	0.013622	0.024606	0.022605	-0.23469	HLA-E
<u>3819</u> <u>4 s</u> <u>at216</u> <u>5</u>						
	M63438	0.013622	0.024606	0.005389	-0.75873	IGKC
<u>3341</u> <u>0 at2</u> <u>166</u>						
	S66213	0.013622	0.024606	0.011362	-0.09802	ITGA6
<u>4001</u> <u>8 at2</u> <u>167</u>						
	AB007870	0.013622	0.024606	0.002855	0.657213	KIAA0410

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4125 8 at2 168	N29665	0.013622	0.024606	0.008301	-0.49779	KIAA0618
3658 8 at2 169	AB018353	0.013622	0.024606	0.033864	-0.3542	KIAA0810
3243 4 at2 170	D10522	0.013622	0.024606	0.028464	0.22227	MACS
3324 5 at2 171	AF004709	0.013622	0.024606	0.018118	-0.09931	MAPK13
4184 3 r at217 2	W28275	0.013622	0.024606	0.005871	-0.27591	MGC11061
3376 9 at2 173	AF087020	0.013622	0.024606	0.032064	-0.13544	MPZL1
1719 at21 74	U61981	0.013622	0.024606	0.012069	-0.20932	MSH3
4057 1 at2 175	U90942	0.013622	0.024606	0.004002	0.179029	MYO5A
743 at217 6	D50370	0.013622	0.024606	0.008327	-0.11492	NAP1L3
4147 5 at2 177	U91512	0.013622	0.024606	0.00493	0.549889	NINJ1
3973 5 at2 178	AF069987	0.013622	0.024606	0.007336	-0.16953	NIT1
1248 at21 79	U37689	0.013622	0.024606	0.007097	-0.17369	POLR2H
1295 at21 80	L19067	0.013622	0.024606	0.006406	0.148517	RELA
3758 5 at2 181	X13482	0.013622	0.024606	0.016873	0.241998	SNRPA1
778 s at2 182	D16827	0.013622	0.024606	0.004314	-0.16954	SSTR5
3882 2 at2 183	AB011420	0.013622	0.024606	0.030791	0.171669	STK17A
3500 6 at2 184	L39060	0.013622	0.024606	0.026797	-0.24028	TAF1A
3280 2 at2 185	AB011169	0.013622	0.024606	0.004017	-0.24355	TEB4

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1328 at21 86	U69108	0.013622	0.024606	0.024472	-0.17595	TRAF5
4124 2 at2 187	AB011004	0.013622	0.024606	0.00265	1.03158	UAP1
3388 4 s at218 8	AB014584	0.013622	0.024606	0.028525	-0.1337	UBE4B
1790 s at 2189	HG3914- HT4184	0.013622	0.024606	0.025854	-0.12454	
3358 8 at2 190	Z32860	0.013622	0.024606	0.002037	-0.11041	
3661 1 at2 191	U25849	0.013622	0.024606	0.00632	-0.43498	
3681 8 at2 192	AF052100	0.013622	0.024606	0.006718	-0.2297	
3738 1 g at219 3	X59268	0.013622	0.024606	0.003586	0.479423	GTF2B
3876 4 at2 194	AF007142	0.013622	0.024606	0.01864	-0.34584	
4064 2 at2 195	AI312646	0.013622	0.024606	0.027596	-0.14991	
3793 9 at2 196	AL022318	0.047678	0.028192	0.049355	-0.11704	APOBEC1L
3489 8 at2 197	M30704	0.047678	0.028192	0.00926	0.279668	AREG
3596 8 s at219 8	AF001307	0.047678	0.028192	0.018109	-0.12594	ARNT
3646 3 at2 199	AB020680	0.047678	0.028192	0.007009	0.227256	BAG5
3727 4 at2 200	AF018631	0.047678	0.028192	0.008344	-0.13689	BTD
3721 8 at2 201	D64110	0.047678	0.028192	0.022809	0.398412	BTG3
3753 6 at2 202	Z11697	0.047678	0.028192	0.024131	0.750492	CD83
3969	M31516	0.047678	0.028192	0.021562	0.517068	DAF

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5 at2 203						
3974 4 at2 204	AF000982	0.047678	0.028192	0.025357	0.29808	DDX3
3203 2 at2 205	L77566	0.047678	0.028192	0.01243	0.178957	DGSI
4015 4 at2 206	AL096725	0.047678	0.028192	0.007381	0.436688	DKFZP434B103
3756 4 at2 207	AL080201	0.047678	0.028192	0.044829	-0.11576	DKFZP434F162
3696 1 at2 208	AL050286	0.047678	0.028192	0.004267	-0.22397	DKFZP586A011
3420 1 at2 209	Y13350	0.047678	0.028192	0.015562	0.137002	DNAJA2
4106 7 at2 210	AJ223333	0.047678	0.028192	0.013836	-0.17437	DNMT2
267 at221 1	L34075	0.047678	0.028192	0.013848	-0.25236	FRAP1
3433 2 at2 212	D31766	0.047678	0.028192	0.029287	-0.09623	GNPI
3169 3 f at221 3	Z80776	0.047678	0.028192	0.002034	0.143491	H2AFG
1122 f at 2214	K03183	0.047678	0.028192	0.040298	0.163306	HUMCGBBA3
1501 at22 15	X57025	0.047678	0.028192	0.009135	0.437394	IGF1
4148 3 s at221 6	X56681	0.047678	0.028192	0.012885	0.423181	JUND
4124 3 at2 217	AB007916	0.047678	0.028192	0.00772	-0.45744	KIAA0447
3340 7 at2 218	AI672098	0.047678	0.028192	0.014331	0.160649	KIAA0934
3321 9 at2 219	AB029020	0.047678	0.028192	0.035285	-0.3101	KIAA1097
3916 3 at2 220	W27233	0.047678	0.028192	0.019918	-0.24802	KIDINS220

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3513 9 at2 221	AL049341	0.047678	0.028192	0.001943	-0.3086	LOC57209
3729 7 at2 222	AL049422	0.047678	0.028192	0.028823	0.264129	LOC84549
1857 at22 23	AF010193	0.047678	0.028192	0.003729	0.927225	MADH7
4127 9 f at222 4	AF007134	0.047678	0.028192	0.009151	-0.1209	MAPK8IP1
1124 at22 25	L04731	0.047678	0.028192	0.025599	-0.07236	MLL
3970 7 at2 226	AB014547	0.047678	0.028192	0.023787	-0.15831	MTMR4
3827 6 at2 227	U91616	0.047678	0.028192	0.018681	0.377931	NFKBIE
3762 3 at2 228	X75918	0.047678	0.028192	0.019713	1.21948	NR4A2
3751 8 at2 229	AL049842	0.047678	0.028192	0.022698	0.201258	NUFIP1
3362 8 g at223 0	U57843	0.047678	0.028192	0.011796	-0.13969	PIK3CD
546 at223 1	S76965	0.047678	0.028192	0.012413	0.426208	PKIA
3718 9 at2 232	AL023553	0.047678	0.028192	0.00321	-0.15608	PMM1
1463 at22 33	M93425	0.047678	0.028192	0.019899	-0.36854	PTPN12
3215 6 at2 234	AF044968	0.047678	0.028192	0.006887	0.121898	PVRL2
621 at223 5	M28211	0.047678	0.028192	0.050065	-0.08518	RAB4
3876 2 at2 236	AF083255	0.047678	0.028192	0.021248	-0.27368	RNAHP
3289 9 s at223 7	U04897	0.047678	0.028192	0.013893	0.278167	RORA
3265	AL031228	0.047678	0.028192	0.020491	-0.22382	SACM2L

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8 at2 238						
3699 8 s at223 9	Y08262	0.047678	0.028192	0.008184	-0.34195	SCA2
3811 0 at2 240	AF000652	0.047678	0.028192	0.001533	0.415218	SDCBP
3418 9 at2 241	D31891	0.047678	0.028192	0.00536	-0.18144	SETDB1
3588 3 at2 242	X66079	0.047678	0.028192	0.008707	0.129642	SPIB
3220 1 at2 243	Z96932	0.047678	0.028192	0.013622	-0.14003	SSNA1
3387 3 at2 244	D43642	0.047678	0.028192	0.015302	-0.26409	TCFL1
3325 3 at2 245	D50919	0.047678	0.028192	0.016207	-0.23972	TRIM14
4056 7 at2 246	X01703	0.047678	0.028192	0.004339	0.386096	TUBA3
3610 0 at2 247	AF022375	0.047678	0.028192	0.015198	0.503607	VEGF
4154 2 at2 248	AF062346	0.047678	0.028192	0.014763	0.455053	ZNF216
3169 7 s at224 9	J04755	0.047678	0.028192	0.014444	0.302274	
3287 8 f at225 0	AA524802	0.047678	0.028192	0.036226	-0.24775	
3922 3 at2 251	AL096749	0.047678	0.028192	0.017041	0.106309	
3868 0 at2 252	M21259	0.047678	0.028192	0.025927	0.18378	
3690 2 at2 253	X61587	0.047678	0.037364	0.024028	0.222788	ARHG
3766 1 at2 254	J04027	0.047678	0.037364	0.019918	0.336927	ATP2B1
3317 4 s 254	W28091	0.047678	0.037364	0.016936	-0.1567	BBS4



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at2255						
2031 s at 2256	U03106	0.047678	0.037364	0.004064	0.915096	CDKN1A
4014 9 at2 257	AL049924	0.047678	0.037364	0.001517	-0.23208	DKFZP547G1110
3593 4 at2 258	L19161	0.047678	0.037364	0.006578	-0.49859	EIF2S3
3939 0 at2 259	AF052123	0.136189	0.037364	0.013524	-0.24445	FLJ10814
3982 7 at2 260	AA522530	0.047678	0.037364	0.038021	0.413536	FLJ20500
3576 9 at2 261	AJ011001	0.047678	0.037364	0.016436	-0.63045	GPR56
476 s at2 262	U50079	0.047678	0.037364	0.013178	-0.37546	HDAC1
4021 9 at2 263	AI796944	0.047678	0.037364	0.011597	0.216392	HIS1
4067 4 s at2264	S82986	0.047678	0.037364	0.006441	-0.20652	HOXC6
4112 2 at2 265	AB011173	0.047678	0.037364	0.01376	-0.26283	KIAA0601
3704 1 at2 266	AB023160	0.047678	0.037364	0.029467	-0.23276	KIAA0943
3228 8 r at2267	AJ001685	0.047678	0.037364	0.015208	-0.48906	KLRC3
3353 1 at2 268	AJ000673	0.047678	0.037364	0.009021	-0.38103	KLRD1
3850 0 at2 269	AB002450	0.047678	0.037364	0.003391	-0.37426	LOC51014
3748 6 f at2270	U68385	0.047678	0.037364	0.007651	-0.16327	MEIS3
4054 7 at2 271	AI688516	0.047678	0.037364	0.017859	-0.15146	NDUFA2
3265 1 at2	W28770	0.047678	0.037364	0.005269	-0.16121	NP25

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272						
3271 9 at2 273	L41827	0.047678	0.037364	0.011308	0.139896	NRG1
4008 8 at2 274	X84373	0.047678	0.037364	0.00725	0.77533	NRIP1
1115 at22 75	M25897	0.047678	0.037364	0.025747	-0.41462	PF4
475 at227 6	U50062	0.047678	0.037364	0.018154	0.19401	RIPK1
3236 4 at2 277	AJ011785	0.047678	0.037364	0.017907	-0.07616	SIX6
3313 1 at2 278	X70683	0.047678	0.037364	0.0155	-0.10219	SOX4
3179 7 at2 279	AL035699	0.047678	0.037364	0.006561	-0.15185	TBPL1
3343 9 at2 280	D15050	0.047678	0.037364	0.016133	0.990791	TCF8
3236 0 s at228 4	AF017146	0.047678	0.037364	0.002975	-0.20652	TOP3B
3785 4 at2 282	U54996	0.047678	0.037364	0.00691	-0.17359	ZW10
705 at228 3	HG4234- HT	0.047678	0.037364	0.003258	-0.13985	
1520 s at 2284	X04500	0.047678	0.058634	0.02228	0.857952	IL1B

**Table IV: Differential Gene Expression in MOG-reactive T-cells- MS vs. Healthy**

Affymetrix ID no: SEQ ID NO:	Identifier	Symbol	Name	Function	Fold Change	Pvalue t-test
1586 at2285	Up regulated M35878	IGFBP3	insulin-like growth factor binding protein 3	modulate IGF activity	5.8	0.03
39765 at2286	AB002318	KIAA0320	KIAA0320 protein		2.4	0.05
1953 at2287	AF024710	VEGF	vascular endothelial growth factor	endothelial cell proliferation	2.3	0.02
38829 r at2288	AA628946	KHSRP	KH-type splicing regulatory protein	mRNA processing	2.2	0.01

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635 s at2289	L42374	PPP2R5B	protein phosphatase 2, regulatory subunit B	protein phosphatase	2.1	0.05
	U54644	TUB	tubby (mouse) homolog	may be a transcription factor	1.8	0.01
34600 s at2290						
33293 at2291	AB023167	KIAA0950	lifeguard	Apoptosis	1.8	0.006
37003 at2292	X62654	CD63	CD63 antigen (melanoma 1 antigen)	growth regulation	1.8	0.03
39103 s at2293	H98552		cDNA DKFZp586I0523		1.8	0.01
35986 at2294	AL050395	MOF	member of MYST acetyl transferases	histone acetyl transferases	1.7	0.03
37490 at2295	L27213	SLC4A3	solute carrier family 4, anion exchange 3	inorganic anion exchanger	1.7	0.01
32246 g at2296	AF014837	M6A	putative methyltransferase	Transcription factor	1.6	0.05
31783 at2297	AB014537	KIAA0637	KIAA0637 gene product	Apoptosis	1.5	0.003
32192 g at2298	D13969	ZNF144	zinc finger protein 144 (Mel-18)	DNA-Binding protein	1.5	0.04
34066 at2299	AJ012590	H6PD	hexose-6-phosphate dehydrogenase	Oxidoreductase	1.5	0.04
2060 at2300	M13995	BCL2	B-cell CLL/lymphoma 2	Apoptosis	1.5	0.03
36337 at2301	AI760801		chromosome 19, cosmid R31180		1.5	0.009
40997 at2302	AI660963	MAP3K12	mitogen-activated protein 3 kinase 12	Transferase cytoplasmic	1.5	0.02
	<b>Down regulated</b> D45248	PSME2				
1184 at2303			proteasome activator subunit 2 (PA28 beta)	Protein degradation	-1.5	0.04
33323 at2304	W28612		ESTs		-1.5	0.02
39105 at2305	Z46389	VASP	vasodilator-stimulated phosphoprotein	Signal transduction	-1.6	0.02
32222 at2306	AA152202	FLJ14639	hypothetical protein FLJ14639		-1.6	0.02
41460 at2307	AF080561	RBM14	RNA binding motif protein 14	RNA binding protein	-1.7	0.03
	D50922	KIAA0132	Kelch-like ECH-associated protein 1	ECH-associated protein 1	-1.7	0.03
35322 at2308						
37474 at2309	AF025441	OIP5	Opa-interacting protein 5		-1.8	0.04
31853 at2310	AF080227	EED	embryonic ectoderm development	transcriptional repressor	-1.8	0.04
722 at2311	D87957	RQCD1	required for cell differentiation	sex differentiation	-1.9	0.03
	X61498	NFKB2	nuclear factor of kappa light polypeptide Bcells	expression of inflammatory genes	-1.9	0.05
40362 at2312						
	X52425	IL4R	interleukin 4 receptor	receptor signalling protein	-2	0.04
276 at2313						
404 at2314	L08069	DNAJA1	DnaJ (Hsp40) homolog, subfamily A, member 1	protein folding and transport	-2	0.04
39853 s at2315	AF071504	STX11	syntaxin 11	protein transport	-2.1	0.03

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1104	s at2316	M11717	HSPA1A	heat shock 70kD protein 1A	heat shock response	-2.2	0.03
31692	at2317	M59830	HSPA1B	heat shock 70kD protein 1B	heat shock response	-2.2	0.03
258	at2318	M16441	TNF	Human tumor necrosis factor	Inflammatory response	-2.3	0.05
1427	g at2319	D89077	SLA	Src-like-adaptor		-2.4	0.05
37305	at2320	U77949	CDC6	cell division cycle 6, S. cerevisiae homolog	DNA replication checkpoint	-2.5	0.02
1536	at2321	D38549	KIAA0068	KIAA0068 protein		-2.5	0.01
1670	at2322	L23959	TFDP1	transcription factor Dp-1	cycle progression G1 to S-phase	-2.5	0.01
626	s at2323	L78833	BRCA1	Breast cancer susceptibility gene		-2.7	0.04
36879	at2324	M63193	ECGF1	endothelial cell growth factor 1	stimulates angiogenesis	-2.8	0.01
41657	at2325	AF035625	STK11	serine/threonine kinase 11	Peutz-Jeghers syndrome	-2.9	0.04
36674	at2326	J04130	SCYA4	small inducible cytokine A4	Cell-to-cell signalling	-2.9	0.05
32618	at2327	X93086	BLVRA	biliverdin reductase A	biliverdin reductase	-4	0.03

Table V: Differential Gene Expression in Probable MS vs. Healthy

affymetrix ID no:SEQ ID NO:	Identification	TNOM PValue	Info PValue	t-Test PValue	Log Fold Change	Gene Symbol
218290 at2328	NM_018049.1	0.000233	0.000233	2.46E-05	0.438337	FLJ10297
203162 s at2329	NM_005886.1	0.000233	0.000233	0.000553	0.35972	KATNB1
204224 s at2330	NM_000161.1	0.000233	0.000233	0.000297	-0.48848	GCH1
200881 s at2331	NM_001539.1	0.000233	0.000233	0.000144	-0.58017	DNAJA1
211699 x at2332	AF349571.1	0.004202	0.004202	0.000274	1.78925	HBA1
209116 x at2333	M25079.1	0.004202	0.004202	0.000247	1.59503	HBB
217414 x at2334	V00489	0.004202	0.004202	0.000268	1.54947	
211745 x at2335	BC005931.1	0.004202	0.004202	0.000296	1.48707	HBA2
214414 x at2336	T50399	0.004202	0.004202	0.000275	1.43533	HBA2
219259 at2337	NM_024567.1	0.004202	0.004202	0.002206	1.42146	FLJ21616
209458 x at2338	AF105974.1	0.004202	0.004202	0.001086	1.3896	HBA1
204018 x at2339	NM_000558.2	0.004202	0.004202	0.000707	1.3348	HBA1
213515 x at2340	A1133353	0.004202	0.004202	0.000897	1.29746	HBG2
217282 x at2341	AF059180	0.004202	0.004202	0.000309	1.29355	
211696 x at2342	AF349114.1	0.004202	0.004202	0.000163	1.27511	HBB
217529 at2343	BE547674	0.004202	0.004202	0.002947	0.636619	
207641 at2344	NM_012452.1	0.004202	0.004202	0.000541	0.570818	TNFRSF13B
43544 at2345	AA314406	0.004202	0.001401	0.002013	0.520631	TRAP95
202926 at2346	NM_015909.1	0.004202	0.001401	0.000398	0.501733	NAG

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217763 s at2347	NM 006868.1	0.004202	0.004202	0.002711	0.49862	RAB31
209790 s at2348	BC000305.1	0.004202	0.004202	0.006921	0.475733	CASP6
32032 at2349	L77566	0.004202	0.001401	0.00033	0.446293	DGSI
205396 at2350	BF971416	0.004202	0.004202	0.002405	0.410742	DKFZP586N072 1
202759 s at2351	BE879367	0.004202	0.004202	0.00056	0.382484	AKAP2
201284 s at2352	NM 001640.2	0.004202	0.001401	0.004091	0.36631	APEH
205851 at2353	BC001808.1	0.004202	0.004202	0.012997	0.347043	NM23-H6
212194 s at2354	AL049539	0.004202	0.004202	0.010738	0.2822	KIAA0255
222125 s at2355	BC000580.1	0.004202	0.001401	0.014166	0.270658	PH-4
203274 at2356	NM 012151.2	0.004202	0.001401	0.000685	0.267664	F8A
217931 at2357	BC004423.1	0.004202	0.004202	0.012194	0.249144	TNRC5
200053 at2358	NM 004890.1	0.004202	0.001401	0.010332	0.134439	SPAG7
9 40612 at235	AB029040	0.004202	0.004202	0.010819	-0.14172	KIAA1117
218107 at2360	NM 025160.1	0.004202	0.001401	0.004986	-0.21141	FLJ21016
221873 at2361	AW162015	0.004202	0.004202	0.301224	-0.24766	ZNF143
204249 s at2362	NM 005574.2	0.004202	0.004202	0.107595	-0.24939	LMO2
200777 s at2363	NM 014670.1	0.004202	0.004202	0.025534	-0.27225	BZW1
213198 at2364	AL117643.1	0.004202	0.004202	0.046495	-0.27766	
221751 at2365	AA628948	0.004202	0.001401	0.000319	-0.28951	ADSS
211686 s at2366	AF251062.1	0.004202	0.001401	0.000435	-0.30924	LOC84549
212501 at2367	AL564683	0.004202	0.004202	0.018258	-0.44633	CEBPB
203885 at2368	NM 014999.1	0.004202	0.004202	0.001021	-0.47304	RAB21
219620 x at2369	NM 017723.1	0.004202	0.004202	0.02759	-0.49548	FLJ20245
204924 at2370	NM 003264.1	0.004202	0.004202	0.002592	-0.49551	TLR2
210275 s at2371	AF062347.1	0.004202	0.004202	0.00529	-0.51432	ZNF216
203927 at2372	NM 004556.1	0.004202	0.004202	0.001134	-0.53489	NFKBIE
215009 s at2373	U92014.1	0.004202	0.004202	0.003064	-0.59511	
204435 at2374	NM 014778.1	0.004202	0.004202	0.001106	-0.65156	KIAA0410
207108 s at2375	NM 015384.1	0.004202	0.004202	0.002943	-0.68193	IDN3
215501 s at2376	AK022513.1	0.004202	0.004202	0.001326	-0.68416	DUSP10
201110 s at2377	NM 003246.1	0.004202	0.001401	0.000162	-1.44745	THBS1
201109 s at2378	AI812030	0.004202	0.001401	7.42E-05	-1.51098	THBS1
204848 x at2379	NM 000559.1	0.035714	0.035247	0.006202	1.93991	HBG1
204419 x at2380	NM 000184.1	0.035714	0.04225	0.009164	1.67513	HBG2
212531 at2381	NM 005564.1	0.035714	0.04225	0.010814	1.03322	LCN2
209889 at2382	AF274863.1	0.035714	0.00747	0.007719	0.952868	SEC31B-1
207509 s at2383	NM 002288.2	0.035714	0.015406	0.010689	0.834313	LAIR2
211430 s at2384	M87789.1	0.035714	0.04225	0.058518	0.79032	IGHG3
219630 at2385	NM 005764.1	0.035714	0.04225	0.053679	0.789147	DD96
216379 x at2386	AK000168.1	0.035714	0.04225	0.038176	0.763766	KIAA1919
208151 s at2387	NM 020037.1	0.035714	0.035247	0.061379	0.746143	ABCC3
216576 x at2388	AF103529.1	0.035714	0.035247	0.015284	0.736268	
215379 x at2389	AV698647	0.035714	0.035247	0.017411	0.616137	IGLJ3
214739 at2390	AI357539	0.035714	0.04225	0.00558	0.601843	MGC4126
206458 s at2391	NM 015935.1	0.035714	0.035247	0.021683	0.593818	CGI-01

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37201 at2392	D38535	0.035714	0.04225	0.016025	0.571168	ITIH4
222056 s at2393	AA723370	0.035714	0.04225	0.039917	0.570325	LOC51011
209322 s at2394	AF227968.1	0.035714	0.00747	0.005308	0.566516	SH2B
217418 x at2395	X12530.1	0.035714	0.04225	0.056335	0.559172	MS4A1
214316 x at2396	AI348935	0.035714	0.035247	0.014129	0.546773	CALR
204189 x at2397	NM 003422.1	0.035714	0.04225	0.006737	0.536815	ZNF42
205983 at2398	NM 015559.1	0.035714	0.04225	0.028795	0.536316	SETBP1
220058 at2399	NM 013378.1	0.035714	0.035247	0.005191	0.532564	VPREB3
204788 s at2400	NM 004912.1	0.035714	0.015406	0.003037	0.52082	CCM1
201115 at2401	NM 006230.1	0.035714	0.015406	0.007471	0.517979	POLD2
205257 at2402	NM 006235.1	0.035714	0.035247	0.021726	0.515263	POU2AF1
212955 s at2403	AL037557	0.035714	0.00747	0.002786	0.511724	POLR2I
204377 s at2404	NM 014703.1	0.035714	0.00747	0.006709	0.4938	KIAA0800
203871 at2405	NM 015670.1	0.035714	0.035247	0.045708	0.464156	SENP3
213052 at2406	AA643304	0.035714	0.015406	0.004712	0.459694	
203186 at2407	AI948503	0.035714	0.04225	0.017964	0.45625	ABCC4
210356 x at2408	BC002807.1	0.035714	0.04225	0.100759	0.455683	MS4A1
209586 s at2409	AF123539.1	0.035714	0.035247	0.028286	0.454603	HTCD37
212813 at2410	AA149644	0.035714	0.00747	0.02413	0.450082	JAM3
210542 s at2411	BC000585.1	0.035714	0.04225	0.033113	0.44368	SLC21A11
210086 s at2412	AB044806.1	0.035714	0.04225	0.007766	0.433985	KCNH2
215289 x at2413	U37025	0.035714	0.035247	0.046971	0.427213	SULT1A1
218440 at2414	NM 020166.2	0.035714	0.035247	0.006318	0.423798	MCCC1
206056 s at2415	NM 002876.1	0.035714	0.035247	0.026644	0.414867	RAD51C
206182 at2416	NM 002387.1	0.035714	0.035247	0.01092	0.409481	MCC
206751 at2417	NM 005816.1	0.035714	0.04225	0.103051	0.407348	TACTILE
213484 at2418	H95263	0.035714	0.035247	0.069113	0.406766	
200957 s at2419	NM 003146.1	0.035714	0.035247	0.003146	0.405309	SSRP1
204857 at2420	NM 003550.1	0.035714	0.035247	0.054105	0.403851	MAD1L1
212982 at2421	AK022494.1	0.035714	0.00747	0.001189	0.397073	RAB3GAP
200982 s at2422	NM 006400.2	0.035714	0.035247	0.021072	0.396297	DCTN2
202789 at2423	NM 006012.1	0.035714	0.035247	0.015241	0.394779	CLPP
203488 at2424	NM 014921.1	0.035714	0.035247	0.014463	0.394308	LEC2
207758 at2425	NM 025056.1	0.035714	0.00747	0.01912	0.393739	FLJ23185
204442 x at2426	NM 003573.1	0.035714	0.04225	0.026053	0.393337	LTBP4
205756 s at2427	NM 000132.2	0.035714	0.035247	0.005292	0.392442	F8
210140 at2428	AF031824.1	0.035714	0.035247	0.190243	0.389129	CST7
206586 at2429	NM 001841.1	0.035714	0.035247	0.07115	0.387067	CNR2
220078 at2430	NM 018391.1	0.035714	0.035247	0.138584	0.386982	FLJ23277
215283 at2431	U79248.1	0.035714	0.00747	0.007475	0.386419	
221186 x at2432	NM 024332.1	0.035714	0.04225	0.039154	0.386198	C6.1A
221969 at2433	BF510692	0.035714	0.04225	0.046782	0.385324	PAX5
49678 s at2434	AA243774	0.035714	0.035247	0.050456	0.381631	MMP24
206853 s at2435	AL121964	0.035714	0.035247	0.107681	0.373759	MAP3K7
210580 x at2436	L25275.1	0.035714	0.035247	0.020684	0.372971	SULT1A3
212314 at2437	AB018289.1	0.035714	0.035247	0.002286	0.37263	KIAA0746

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203709 at2438	NM 000294.1	0.035714	0.035247	0.011432	0.367693	PHKG2
210386 s at2439	BC001906.1	0.035714	0.035247	0.107947	0.366899	MTX1
208488 s at2440	NM 000651.1	0.035714	0.04225	0.047953	0.365471	CR1
202564 x at2441	NM 001667.1	0.035714	0.00747	0.009661	0.362105	ARL2
213051 at2442	AI133727	0.035714	0.00747	0.018354	0.358884	ZAP
209177 at2443	BC002873.1	0.035714	0.035247	0.048711	0.358052	DKFZP564J0123
203677 s at2444	NM 004178.2	0.035714	0.035247	0.007313	0.356459	TARBP2
201188 s at2445	BG532929	0.035714	0.035247	0.037215	0.356254	SSB
205541 s at2446	NM 018094.1	0.035714	0.035247	0.014302	0.351314	GSPT2
40255 at2447	AC004531	0.035714	0.00747	0.01714	0.350445	DDX28
217887 s at2448	NM 001981.1	0.035714	0.035247	0.010776	0.347051	EPS15
212960 at2449	AB020689.1	0.035714	0.035247	0.024594	0.346253	KIAA0882
203615 x at2450	NM 001055.1	0.035714	0.035247	0.056416	0.344937	SULT1A1
218431 at2451	NM 022067.1	0.035714	0.035247	0.001332	0.337713	FLJ12707
203309 s at2452	NM 000195.1	0.035714	0.00747	0.014156	0.3312	HPS1
204617 s at2453	NM 022914.1	0.035714	0.00747	0.167735	0.331082	24432
204394 at2454	NM 003627.1	0.035714	0.035247	0.062759	0.330371	POV1
218581 at2455	NM 022060.1	0.035714	0.035247	0.010717	0.328122	FLJ12816
213581 at2456	BF446180	0.035714	0.035247	0.02537	0.326347	PDCD2
211385 x at2457	U28169.1	0.035714	0.035247	0.0891	0.326218	SULT1A2
209019 s at2458	AF316873.1	0.035714	0.035247	0.022727	0.3257	PINK1
219067 s at2459	NM 017615.1	0.035714	0.035247	0.087717	0.325056	FLJ20003
201871 s at2460	NM 015853.1	0.035714	0.035247	0.021537	0.321089	LOC51035
219192 at2461	NM 018449.1	0.035714	0.035247	0.01461	0.318475	UBAP2
204978 at2462	NM 007056.1	0.035714	0.035247	0.013827	0.318086	SWAP2
215691 x at2463	AV702994	0.035714	0.035247	0.010766	0.316138	LOC51668
215090 x at2464	AK021884.1	0.035714	0.04225	0.016862	0.315879	NPEPPS
208709 s at2465	U64898.1	0.035714	0.035247	0.012705	0.309446	NRD1
44617 at2466	AI431902	0.035714	0.035247	0.026163	0.307321	FLJ13491
202139 at2467	NM 003689.1	0.035714	0.04225	0.03366	0.306281	AKR7A2
203289 s at2468	BE791629	0.035714	0.00747	0.039522	0.304821	CGTHBA
204000 at2469	NM 016194.1	0.035714	0.035247	0.060249	0.303474	GNB5
202080 s at2470	NM 014965.1	0.035714	0.035247	0.013547	0.298042	KIAA1042
202682 s at2471	NM 003363.1	0.035714	0.035247	0.018393	0.295239	USP4
33304 at2472	U88964	0.035714	0.035247	0.019349	0.294427	ISG20
209729 at2473	BC001782.1	0.035714	0.035247	0.059026	0.293156	GAS2L1
209158 s at2474	BC004361.1	0.035714	0.04225	0.084538	0.292509	PSCD2
217980 s at2475	NM 017840.1	0.035714	0.035247	0.003929	0.290472	MRPL16
201280 s at2476	NM 006321.1	0.035714	0.015406	0.006688	0.288723	ARIH2
64486 at2477	AI341234	0.035714	0.035247	0.007356	0.284699	CORO1B
212486 s at2478	N20923	0.035714	0.035247	0.020271	0.280552	FYN
211680 s at2479	L42531.1	0.035714	0.035247	0.008554	0.280023	
214749 s at2480	AK000818.1	0.035714	0.035247	0.02226	0.277695	FLJ20811
203685 at2481	NM 000633.1	0.035714	0.035247	0.044639	0.276897	BCL2
213607 x at2482	BE551347	0.035714	0.035247	0.209003	0.276406	FLJ13052
202808 at2483	AK000161.1	0.035714	0.04225	0.016752	0.276103	FLJ20154

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212735 at2484	AI798908	0.035714	0.04225	0.015969	0.274921	KIAA0226
219757 s at2485	NM_005111.1	0.035714	0.035247	0.01405	0.273732	CRYZL1
201346 at2486	NM_024551.1	0.035714	0.035247	0.00372	0.272684	FLJ21432
221708 s at2487	BC006214.1	0.035714	0.00747	0.006244	0.268704	IRO039700
203492 x at2488	AI123527	0.035714	0.04225	0.105392	0.268349	KIAA0092
204313 s at2489	NM_004379.1	0.035714	0.035247	0.047229	0.267796	CREB1
213051 s at2490	AA643304	0.035714	0.035247	0.039678	0.258201	
204744 s at2491	NM_013417.1	0.035714	0.035247	0.047087	0.257738	IARS
212946 at2492	AK025432.1	0.035714	0.035247	0.051871	0.257456	KIAA0564
40829 at2493	AB028960	0.035714	0.04225	0.040942	0.254827	KIAA1037
204608 at2494	NM_000048.1	0.035714	0.04225	0.038931	0.254447	ASL
200830 at2495	NM_002808.1	0.035714	0.035247	0.023966	0.250129	PSMD2
207122 x at2496	NM_001054.1	0.035714	0.035247	0.062598	0.248696	SULT1A2
206219 s at2497	NM_005428.2	0.035714	0.035247	0.007185	0.248439	VAV1
217925 s at2498	NM_022758.1	0.035714	0.04225	0.011489	0.246401	FLJ22195
209075 s at2499	AY009128.1	0.035714	0.035247	0.084938	0.246257	NIFU
214756 x at2500	AB017004.1	0.035714	0.035247	0.079567	0.244954	PMS2L8
202520 s at2501	NM_000249.1	0.035714	0.04225	0.021274	0.243441	MLH1
211609 x at2502	U51007.1	0.035714	0.035247	0.042753	0.242223	
210312 s at2503	BC002640.1	0.035714	0.035247	0.074751	0.240603	
200851 at2504	NM_016284.1	0.035714	0.00747	0.001929	0.240076	KIAA1007
201029 s at2505	NM_002414.1	0.035714	0.035247	0.063998	0.239013	MIC2
210620 s at2506	BC000212.1	0.035714	0.035247	0.021052	0.237577	GTF3C2
204977 at2507	NM_004398.2	0.035714	0.035247	0.040656	0.235252	DDX10
218791 s at2508	NM_024713.1	0.035714	0.035247	0.048887	0.234927	FLJ22557
200832 s at2509	NM_002810.1	0.035714	0.035247	0.038558	0.234593	PSMD4
219801 at2510	NM_030580.1	0.035714	0.035247	0.031263	0.233466	MGC10520
212216 at2511	AB007896.1	0.035714	0.035247	0.211816	0.231563	KIAA0436
205192 at2512	NM_003954.1	0.035714	0.04225	0.051916	0.230862	MAP3K14
205651 s at2513	NM_025207.1	0.035714	0.035247	0.020823	0.230015	PP591
219853 at2514	NM_016323.1	0.035714	0.035247	0.051393	0.228764	LOC51191
218959 at2515	NM_016069.1	0.035714	0.04225	0.132766	0.223618	Magmas
218407 x at2516	NM_013349.1	0.035714	0.035247	0.028748	0.223073	SPUF
201892 s at2517	NM_000884.1	0.035714	0.035247	0.064347	0.222421	IMPDH2
222254 at2518	BG167570	0.035714	0.04225	0.108243	0.219652	DKFZp762N1910
201740 at2519	NM_004551.1	0.035714	0.00747	0.06025	0.217427	NDUFS3
200742 s at2520	BG231932	0.035714	0.04225	0.079649	0.210447	CLN2
219034 at2521	NM_017851.1	0.035714	0.035247	0.036308	0.209956	FLJ20509
201999 s at2522	NM_006519.1	0.035714	0.035247	0.032991	0.202387	TCTEL1
209746 s at2523	AF032900.1	0.035714	0.035247	0.174549	0.200739	COQ7
200920 s at2524	AL535380	0.035714	0.035247	0.265205	0.198073	BTG1
203704 s at2525	AW118862	0.035714	0.035247	0.02173	0.193753	RREB1
202054 s at2526	NM_000382.1	0.035714	0.035247	0.27948	0.193509	ALDH3A2
219394 at2527	NM_024419.1	0.035714	0.035247	0.164883	0.190623	PGS1
200054 at2528	NM_003904.1	0.035714	0.035247	0.245676	0.190422	ZNF259
209971 x at2529	AI928526	0.035714	0.00747	0.036861	0.185624	JTV1



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220150 s at2530	NM 024581.1	0.035714	0.035247	0.230867	0.185323	FLJ13942
208749 x at2531	AF085357.1	0.035714	0.035247	0.110175	0.184965	FLOT1
201350 at2532	NM 004475.1	0.035714	0.035247	0.072642	0.180483	FLOT2
221609 s at2533	AF334103.1	0.035714	0.00747	0.009664	0.17511	GU2
218502 s at2534	NM 017829.1	0.035714	0.035247	0.110207	0.174515	CECR5
202041 s at2535	NM 004214.3	0.035714	0.04225	0.016835	0.157902	FIBP
219059 at2536	NM 017704.1	0.035714	0.04225	0.16159	0.157672	FLJ20189
207614 s at2537	NM 003592.1	0.035714	0.035247	0.038652	0.146241	CUL1
201060 x at2538	A1537887	0.035714	0.035247	0.467375	0.139355	EPB72
218159 at2539	NM 023935.1	0.035714	0.035247	0.049119	0.125305	C20orf116
201528 at2540	BG398414	0.035714	0.035247	0.286856	0.123085	RPA1
202263 at2541	NM 016243.1	0.035714	0.035247	0.279995	0.121894	LOC51706
218287 s at2542	NM 012199.1	0.035714	0.035247	0.093241	0.118547	EIF2C1
212508 at2543	AK024029.1	0.035714	0.04225	0.450393	0.11646	MAP-1
207571 x at2544	NM 004848.1	0.035714	0.035247	0.486492	0.113516	ICB-1
212322 at2545	AF144638.1	0.035714	0.035247	0.255571	0.10089	SGPL1
210667 s at2546	D86062.1	0.035714	0.035247	0.532398	0.084417	C21orf33
204563 at2547	NM 000655.2	0.035714	0.035247	0.535745	0.081167	SELL
219464 at2548	NM 018643.1	0.035714	0.035247	0.870775	0.057399	TREM1
219243 at2549	NM 018326.1	0.035714	0.035247	0.929375	0.035048	HIMAP4
204027 s at2550	NM 005371.2	0.035714	0.035247	0.876737	0.025127	METTL1
201281 at2551	NM 007002.1	0.035714	0.035247	0.911541	0.010422	ADRM1
207629 s at2552	NM 004723.1	0.035714	0.035247	0.975685	-0.00562	ARHGEF2
35265 at2553	U31501	0.035714	0.035247	0.724549	-0.0658	FXR2
205425 at2554	NM 005338.3	0.035714	0.04225	0.126911	-0.0661	HIP1
210780 at2555	AB006589.1	0.035714	0.035247	0.00542	-0.10655	ESR2
212569 at2556	AA868754	0.035714	0.035247	0.304519	-0.10746	KIAA0650
215671 at2557	AU144792	0.035714	0.035247	0.008623	-0.11362	
214629 x at2558	AF320999.1	0.035714	0.035247	0.289096	-0.11449	RTN4
204859 s at2559	NM 013229.1	0.035714	0.035247	0.529181	-0.13735	APAF1
220023 at2560	NM 018690.1	0.035714	0.04225	0.261146	-0.14482	APOB48R
213012 at2561	D42055.1	0.035714	0.04225	0.007978	-0.14841	NEDD4
212606 s at2562	BF968633	0.035714	0.035247	0.135003	-0.14873	RNF4
209022 at2563	AK026678.1	0.035714	0.035247	0.00833	-0.15056	STAG2
201817 at2564	NM 014671.1	0.035714	0.035247	0.392979	-0.15386	KIAA0010
208113 x at2565	NM 030979.1	0.035714	0.035247	0.087494	-0.15652	PABPC3
215022 x at2566	BG429214	0.035714	0.035247	0.273519	-0.15766	
220668 s at2567	NM 006892.1	0.035714	0.035247	0.001922	-0.15828	DNMT3B
201174 s at2568	NM 018975.1	0.035714	0.035247	0.042202	-0.16723	RAP1
200904 at2569	AL137335.1	0.035714	0.035247	0.306422	-0.17292	RANBP7
202707 at2570	NM 014016.1	0.035714	0.035247	0.398036	-0.17365	SACM1L
203765 at2571	NM 012198.1	0.035714	0.035247	0.391555	-0.17556	GCA
218047 at2572	NM 024586.1	0.035714	0.04225	0.011965	-0.19298	OSBPL9
201964 at2573	N64643	0.035714	0.035247	0.16498	-0.19313	KIAA0625
206461 x at2574	NM 005951.1	0.035714	0.035247	0.156965	-0.1942	MT1H
202065 at2575	NM 002264.1	0.035714	0.035247	0.138195	-0.1949	

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2178 <del>56</del> at2576	AF182415.1	0.035714	0.04225	0.325959	-0.19495	RBM8A
2142 <del>25</del> at2577	BE674061	0.035714	0.035247	0.015036	-0.20133	PIN4
2032 <del>98</del> s at2578	NM_004973.2	0.035714	0.00747	0.103071	-0.20162	JMJ
2115 <del>84</del> s at2579	U58852.1	0.035714	0.035247	0.510508	-0.20606	NPAT
2052 <del>70</del> s at2580	NM_005565.2	0.035714	0.035247	0.037541	-0.2105	LCP2
2033 <del>84</del> at2581	NM_004941.1	0.035714	0.035247	0.229189	-0.21215	DDX8
2098 <del>80</del> s at2582	U02297.1	0.035714	0.035247	0.252672	-0.21782	SELPLG
2018 <del>73</del> s at2583	NM_002940.1	0.035714	0.035247	0.112373	-0.22731	ABCE1
2086 <del>77</del> s at2584	AL550657	0.035714	0.035247	0.069403	-0.23303	BSG
2222 <del>83</del> at2585	BG387770	0.035714	0.035247	0.032984	-0.2362	MGC32104
2127 <del>14</del> at2586	AL050205.1	0.035714	0.04225	0.352078	-0.23748	LOC113251
2188 <del>83</del> at2587	NM_016653.1	0.035714	0.035247	0.003387	-0.23765	ZAK
2142 <del>01</del> x at2588	AA742237	0.035714	0.035247	0.120935	-0.23853	BAT2
2186 <del>59</del> at2589	NM_021183.1	0.035714	0.035247	0.069121	-0.24239	LOC57826
2123 <del>06</del> at2590	AB014527.1	0.035714	0.035247	0.005636	-0.24315	CLASP2
2133 <del>79</del> at2591	AF091086.1	0.035714	0.035247	0.124853	-0.24621	CL640
2037 <del>51</del> at2592	NM_006748.1	0.035714	0.04225	0.141473	-0.24728	SLA
2179 <del>45</del> at2593	NM_025238.1	0.035714	0.035247	0.046507	-0.24841	BTBD1
2190 <del>17</del> at2594	NM_018638.2	0.035714	0.035247	0.074405	-0.24942	EK11
2080 <del>21</del> s at2595	NM_002913.1	0.035714	0.04225	0.092197	-0.24967	
2029 <del>90</del> at2596	NM_002863.1	0.035714	0.035247	0.034567	-0.25494	PYGL
2094 <del>81</del> at2597	AF226044.1	0.035714	0.035247	0.023966	-0.25679	SNRK
2186 <del>03</del> at2598	NM_016217.1	0.035714	0.035247	0.01673	-0.25733	LOC51696
2095 <del>85</del> s at2599	AF084943.1	0.035714	0.035247	0.024841	-0.26011	MINPP1
2130 <del>44</del> at2600	N22548	0.035714	0.04225	0.03686	-0.26164	ROCK1
2096 <del>43</del> s at2601	AF033850.1	0.035714	0.035247	0.110532	-0.26338	PLD2
2009 <del>71</del> s at2602	NM_014445.1	0.035714	0.00747	0.007058	-0.26858	SERP1
2051 <del>15</del> s at2603	NM_016196.1	0.035714	0.035247	0.014278	-0.27109	KIAA0682
2067 <del>15</del> at2604	NM_012252.1	0.035714	0.035247	0.020625	-0.27124	TFEC
2028 <del>77</del> s at2605	W72082	0.035714	0.035247	0.180599	-0.27284	C1QR1
2178 <del>53</del> at2606	NM_016166.1	0.035714	0.035247	0.071782	-0.27429	PIAS1
2196 <del>28</del> at2607	NM_022470.1	0.035714	0.035247	0.072884	-0.27655	WIG1
2080 <del>92</del> s at2608	NM_030797.1	0.035714	0.035247	0.039197	-0.27728	DKFZP566A1524
2032 <del>75</del> at2609	NM_002199.2	0.035714	0.035247	0.250656	-0.27789	IRF2
2088 <del>96</del> at2610	BC003360.1	0.035714	0.035247	0.02171	-0.27851	DDX18
2180 <del>92</del> s at2611	NM_004504.2	0.035714	0.035247	0.020834	-0.27873	HRB
2028 <del>78</del> s at2612	NM_012072.2	0.035714	0.035247	0.118494	-0.27892	C1QR1
2021 <del>84</del> s at2613	NM_018230.1	0.035714	0.035247	0.071301	-0.28019	NUP133
2018 <del>59</del> at2614	NM_002727.1	0.035714	0.04225	0.038559	-0.28438	PRG1
2012 <del>88</del> s at2615	BC005338.1	0.035714	0.035247	0.114062	-0.28524	CAPZA2
2039 <del>84</del> s at2616	U60521.1	0.035714	0.04225	0.066643	-0.29174	CASP9
2060 <del>25</del> s at2617	AW188198	0.035714	0.035247	0.005126	-0.29178	TNFAIP6
2131 <del>29</del> s at2618	BE908931	0.035714	0.035247	0.017009	-0.29572	
2158 <del>23</del> x at2619	U64661	0.035714	0.04225	0.030982	-0.29704	
2173 <del>46</del> at2620	AL021395	0.035714	0.04225	0.02084	-0.29857	
2022 <del>72</del> s at2621	NM_015176.1	0.035714	0.035247	0.059688	-0.299	KIAA0483

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201707 at2622	NM 002857.1	0.035714	0.04225	0.04761	-0.29944	PXF
209124 at2623	U70451.1	0.035714	0.035247	0.003458	-0.30169	MYD88
219885 at2624	NM 018042.1	0.035714	0.035247	0.020209	-0.30409	FLJ10260
212195 at2625	AL049265.1	0.035714	0.04225	0.136618	-0.30472	
207291 at2626	NM 024081.1	0.035714	0.035247	0.020267	-0.30513	TMG4
209602 s at2627	AI796169	0.035714	0.035247	0.023959	-0.31104	GATA3
213291 s at2628	AA160522	0.035714	0.035247	0.056044	-0.31114	UBE3A
210281 s at2629	AL136621.1	0.035714	0.04225	0.06859	-0.31538	ZNF198
202286 s at2630	NM 003051.1	0.035714	0.035247	0.028776	-0.3171	SLC16A1
212286 at2631	AW572909	0.035714	0.035247	0.027025	-0.31713	KIAA0874
218381 s at2632	NM 017782.1	0.035714	0.04225	0.017104	-0.32078	FLJ20360
212959 s at2633	AK001821.1	0.035714	0.04225	0.013182	-0.32145	MGC4170
214875 x at2634	AW001847	0.035714	0.035247	0.204195	-0.32259	APLP2
203780 s at2635	BF196931	0.035714	0.04225	0.003706	-0.3226	ZFP95
206308 at2636	AJ223333.1	0.035714	0.035247	0.023593	-0.32279	DNMT2
204971 at2637	NM 005213.1	0.035714	0.04225	0.216305	-0.32285	CSTA
212262 at2638	AF142419.1	0.035714	0.04225	0.013772	-0.33425	QKI
219099 at2639	NM 020375.1	0.035714	0.035247	0.07666	-0.33473	C12orf5
217971 at2640	NM 021970.1	0.035714	0.04225	0.054987	-0.33505	MAP2K1IP1
215006 at2641	AK023816.1	0.035714	0.035247	0.136952	-0.34214	
218878 s at2642	NM 012238.3	0.035714	0.00747	0.018308	-0.3438	SIRT1
201362 at2643	AF205218.1	0.035714	0.035247	0.033088	-0.34674	NS1-BP
201097 s at2644	NM 001660.2	0.035714	0.035247	0.020387	-0.35015	ARF4
204493 at2645	NM 001196.1	0.035714	0.015406	0.020544	-0.35511	BID
203455 s at2646	NM 002970.1	0.035714	0.035247	0.064201	-0.35676	SAT
217403 s at2647	AC074331	0.035714	0.035247	0.01515	-0.35767	
201573 s at2648	M75715.1	0.035714	0.035247	0.010802	-0.3577	ETF1
218926 at2649	NM 018657.2	0.035714	0.04225	0.021807	-0.3681	MYNN
202205 at2650	NM 003370.1	0.035714	0.035247	0.056143	-0.37617	VASP
202984 at2651	AI761561	0.035714	0.035247	0.084393	-0.37861	HK2
202925 s at2652	NM 002657.2	0.035714	0.035247	0.043402	-0.39004	PLAGL2
203503 s at2653	NM 004565.1	0.035714	0.035247	0.086212	-0.39025	PEX14
212209 at2654	AK023837.1	0.035714	0.04225	0.083366	-0.39056	KIAA1025
202194 at2655	AL117354	0.035714	0.00747	0.011916	-0.39754	LOC50999
201210 at2656	NM 001356.2	0.035714	0.035247	0.029134	-0.41337	DDX3
218041 x at2657	NM 018573.1	0.035714	0.015406	0.00529	-0.41757	PRO1068
221423 s at2658	NM 030799.1	0.035714	0.035247	0.075235	-0.42088	SMAP-5
213649 at2659	AA524053	0.035714	0.04225	0.031361	-0.42442	
207121 s at2660	NM 002748.1	0.035714	0.035247	0.023266	-0.42563	MAPK6
202270 at2661	NM 002053.1	0.035714	0.035247	0.053201	-0.43747	GBP1
212888 at2662	AB023227.1	0.035714	0.04225	0.003343	-0.43985	KIAA1010
202814 s at2663	AW193511	0.035714	0.035247	0.012709	-0.44652	HIS1
203432 at2664	AW272611	0.035714	0.04225	0.024277	-0.44899	TMPO
212644 s at2665	AI671747	0.035714	0.00747	0.02288	-0.45263	MISS
209362 at2666	AI688580	0.035714	0.035247	0.035918	-0.45484	SURB7
207585 s at2667	NM 002502.1	0.035714	0.035247	0.107712	-0.45745	NFKB2

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203921 at2668	NM 004267.1	0.035714	0.04225	0.030352	-0.47177	CHST2
216841 s at2669	X15132.1	0.035714	0.035247	0.041452	-0.47259	SOD2
219308 s at2670	NM 012093.1	0.035714	0.035247	0.011606	-0.47474	AK5
212623 at2671	D26067.1	0.035714	0.035247	0.003438	-0.47644	KIAA0033
202076 at2672	NM 001166.2	0.035714	0.04225	0.015252	-0.48334	BIRC2
218611 at2673	NM 016545.1	0.035714	0.035247	0.029826	-0.48723	IER5
201953 at2674	NM 021122.2	0.035714	0.035247	0.070882	-0.49855	FACL2
220359 at2675	NM 017936.1	0.035714	0.035247	0.008293	-0.5016	FLJ20707
201925 s at2676	NM 000574.1	0.035714	0.035247	0.022743	-0.50532	DAF
212749 s at2677	AL050144.1	0.035714	0.015406	0.000822	-0.52839	ZNF363
202581 at2678	NM 005346.2	0.035714	0.035247	0.10824	-0.5359	HSPA1B
218689 at2679	NM 022725.1	0.035714	0.035247	0.023814	-0.53779	FANCF
200952 at2680	A1348010	0.035714	0.035247	0.226116	-0.54348	
201709 s at2681	A1927993	0.035714	0.035247	0.054067	-0.54478	OSBP
213281 at2682	BE327172	0.035714	0.035247	0.091317	-0.54925	JUN
213021 at2683	A1741876	0.035714	0.00747	0.025182	-0.57505	
201416 at2684	NM 003107.1	0.035714	0.035247	0.078087	-0.59709	SOX4
216300 x at2685	BE383139	0.035714	0.035247	0.00951	-0.60058	RARA
219714 s at2686	NM 018398.1	0.035714	0.035247	0.016221	-0.603	CACNA2D3
202688 s at2687	NM 000201.1	0.035714	0.035247	0.036915	-0.62554	ICAM1
201473 at2688	NM 002229.1	0.035714	0.035247	0.129802	-0.64436	JUNB
200708 x at2689	NM 021960.1	0.035714	0.04225	0.024176	-0.66914	MCL1
205308 at2690	NM 016010.1	0.035714	0.00747	0.015684	-0.68307	LOC51101
201041 s at2691	NM 004417.2	0.035714	0.035247	0.043377	-0.68458	DUSP1
202241 at2692	NM 025195.1	0.035714	0.035247	0.055882	-0.68638	C8FW
204704 at2693	NM 004418.2	0.035714	0.035247	0.306591	-0.68934	DUSP2
208951 s at2694	AB017493.1	0.035714	0.015406	0.010224	-0.6982	COPEB
209545 s at2695	AF064824.1	0.035714	0.035247	0.010071	-0.70109	RIPK2
203751 x at2696	NM 005354.2	0.035714	0.035247	0.04394	-0.70667	JUND
206245 s at2697	NM 006469.1	0.035714	0.035247	0.006453	-0.71493	NS1-BP
202644 s at2698	NM 006290.1	0.035714	0.035247	0.155375	-0.73437	TNFAIP3
214326 x at2699	A1339541	0.035714	0.035247	0.039838	-0.76402	JUND
209304 x at2700	AF087853.1	0.035714	0.035247	0.076647	-0.77217	GADD45B
216386 x at2701	AL031602	0.035714	0.035247	0.015158	-0.78504	
221477 s at2702	BF575213	0.035714	0.035247	0.007144	-0.78651	
201670 s at2703	M68956.1	0.035714	0.00747	0.001933	-0.79718	MARCKS
202081 at2704	NM 004907.1	0.035714	0.035247	0.006503	-0.81053	ETR101
212659 s at2705	AW083357	0.035714	0.035247	0.009893	-0.81405	IL1RN
206755 at2706	AF153820.1	0.035714	0.035247	0.004403	-0.82757	KCNJ2
202687 s at2707	A1608725	0.035714	0.035247	0.010119	-0.83319	ICAM1
204897 at2708	NM 000958.1	0.035714	0.015406	0.003112	-0.86354	PTGER4
214211 at2709	AA083483	0.035714	0.035247	0.012228	-0.88452	FTH1
203471 s at2710	NM 002664.1	0.035714	0.00747	0.000855	-0.88664	PLEK
213088 at2711	AL031602	0.035714	0.015406	0.00038	-0.88673	
36564 at2712	W27419	0.035714	0.015406	0.000361	-0.95575	
206157 at2713	NM 002852.1	0.035714	0.035247	0.001716	-0.97365	PTX3

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2016 <del>94</del> s at2714	NM 001964.1	0.035714	0.035247	0.068287	-0.99045	EGR1
2093 <del>05</del> s at2715	AF078077.1	0.035714	0.035247	0.017058	-1.003	GADD45B
2135 <del>24</del> s at2716	NM 015714.1	0.035714	0.035247	0.210858	-1.05996	G0S2
2091 <del>89</del> at2717	BC004490.1	0.035714	0.035247	0.068201	-1.06388	FOS
2026 <del>43</del> s at2718	AI738896	0.035714	0.035247	0.071526	-1.09453	TNFAIP3
2223 <del>26</del> at2719	AW973834	0.035714	0.035247	0.030817	-1.09468	
2070 <del>75</del> at2720	NM 004895.1	0.035714	0.035247	0.004992	-1.10724	CIAS1
2108 <del>45</del> s at2721	U08839.1	0.035714	0.035247	0.030968	-1.1245	PLAUR
2014 <del>89</del> at2722	BC005020.1	0.035714	0.035247	0.022893	-1.13801	PPIF
2017 <del>89</del> at2723	NM 005627.1	0.035714	0.035247	0.010834	-1.16132	SGK
2075 <del>74</del> s at2724	NM 015675.1	0.035714	0.035247	0.022251	-1.16822	GADD45B
2034 <del>70</del> s at2725	AI433595	0.035714	0.015406	0.002395	-1.17663	PLEK
2023 <del>40</del> x at2726	NM 002135.1	0.035714	0.035247	0.009942	-1.19934	NR4A1
2015 <del>31</del> at2727	NM 003407.1	0.035714	0.035247	0.0028	-1.30448	ZFP36
2044 <del>40</del> at2728	NM 004233.1	0.035714	0.035247	0.045128	-1.33091	CD83
2057 <del>57</del> at2729	NM 001432.1	0.035714	0.035247	0.001942	-1.33633	EREG
2014 <del>56</del> s at2730	NM 002228.2	0.035714	0.035247	0.007227	-1.34352	JUN
2056 <del>31</del> at2731	NM 004049.1	0.035714	0.035247	0.004927	-1.41895	BCL2A1
3702 <del>8</del> at2732	U83981	0.035714	0.035247	0.005806	-1.46885	PPP1R15A
2052 <del>20</del> at2733	NM 006018.1	0.035714	0.035247	0.002094	-1.50671	HM74
2014 <del>54</del> x at2734	BG491844	0.035714	0.035247	0.011957	-1.61438	JUN
2014 <del>55</del> s at2735	BC002646.1	0.035714	0.035247	0.002438	-1.64136	JUN
2047 <del>48</del> at2736	NM 000963.1	0.035714	0.035247	0.025772	-1.65759	PTGS2
2119 <del>24</del> s at2737	AY029180.1	0.035714	0.035247	0.011082	-1.69399	PLAUR
2020 <del>14</del> at2738	NM 014330.2	0.035714	0.035247	0.003245	-1.74665	PPP1R15A
2016 <del>31</del> s at2739	NM 003897.1	0.035714	0.035247	0.002981	-1.89968	IER3
2097 <del>74</del> x at2740	M57731.1	0.035714	0.035247	0.001811	-1.9703	CXCL2
2028 <del>59</del> x at2741	NM 000584.1	0.035714	0.035247	0.030747	-2.54298	IL8
2050 <del>57</del> at2742	NM 000576.1	0.035714	0.035247	0.000992	-2.66025	IL1B
3940 <del>2</del> at2743	M15330	0.035714	0.035247	0.001505	-2.71142	IL1B

It is appreciated that certain features of the invention, which are, for clarity, described in the context of separate embodiments, may also be provided in combination in a single embodiment. Conversely, various features of the invention, which are, for brevity, described in the context of a single embodiment, may also be provided separately or in any suitable subcombination.

Although the invention has been described in conjunction with specific embodiments thereof, it is evident that many alternatives, modifications and

## ANNOTATED MARKED-UP SPECIFICATION

variations will be apparent to those skilled in the art. Accordingly, it is intended to embrace all such alternatives, modifications and variations that fall within the spirit and broad scope of the appended claims. All publications, patents, patent applications and sequences identified by a GenBank accession number mentioned in this specification are herein incorporated in their entirety by reference into the specification, to the same extent as if each individual publication, patent, patent application or sequence was specifically and individually indicated to be incorporated herein by reference. In addition, citation or identification of any reference in this application shall not be construed as an admission that such reference is available as prior art to the present invention.

ANNOTATED MARKED-UP SPECIFICATION  
ABSTRACT

Markers of multiple sclerosis and methods and kits utilizing same for diagnosing multiple sclerosis in an individual are provided.